

WHOLE WHEAT FLOUR. — The manager of what is known as the Cold Air Attrition Flour Mills, at Chicago, forwarded to us a sample of their whole wheat flour, sometime in August, for trial. As the method of doing business adopted by this concern was manifestly fair and business-like, we decided to give their products a careful examination and trial. This we have done, and take pleasure in reporting favorably upon their flour. The wheat which they grind is evidently of the best quality, and their methods certainly are hardly to be surpassed. The flouring of the wheat is done at one operation and in large and powerful currents of cold air, and no bolt is used to separate the outside covering of the berry, in which reside the rich nitrogenous and phosphatic principles. The flour is several shades darker than the popular kind, but this is unavoidable, and of the slightest possible consequence. The bread which our cook has succeeded in producing from it is rich and excellent. It requires a little skill at first to manipulate the flour and adjust the ferment; but when the right process is learned there is no difficulty in securing light, palatable, and nutritious bread. This variety of flour must in time displace the other, and there is no good reason why the white, starchy flour should be used at all in families. However, great reforms do not come about suddenly, and so we must wait for prejudices to give way. The number of families who clearly understand the importance of good, nutritious bread is very large, and increasing every day.

MESSRS. BILLINGS, CLAPP, & CO. IN NEW YORK.

1875
Brooklyn Journal
1 chemistry

the wine down his throat."

AMERICAN NOTES.

WHAT A WESTERN WOMAN DID IN A DAY. —
"A Farmer's Wife," of Dwight, Illinois, sends to an exchange an account of a day's work, of which the following is a summary: Rose at 4.30, skimmed the milk, fed the chickens (has 33 young ones and 150 eggs nearly ready to hatch), got breakfast, which was eaten at 6 o'clock. Her sister was to drop corn from the planter, and it was arranged that the wife should go to the field at ten o'clock, while the sister returned to the house to mind the baby. So the baby was dressed, the dishes washed, the beds made, the floor mopped, the setting hens fed, chickens killed and prepared for dinner, cookies baked, the baby put to sleep, and the dinner arranged by ten o'clock, when the wife took the lunch and went to the field to relieve her sister. After dinner there was the usual routine-work to do, after which watering plants and other garden work occupied her until three o'clock; then she went to the field and dropped corn until night. After supper she milked, fed the chickens, baked bread, ironed, sewed buttons on the husband's shirts, watered the house-plants, crimped the ruffles on baby's Sunday frock and the lace on her own best dress, besides other things not enumerated here — forgetting nothing that should have been done except patching the hole in a mitten. If the husband has anything like the energy of the wife, there is wealth in store for that couple, which, it is to be hoped, the baby will inherit.

A Cheap Diet for Hard Times.

MR. EDITOR:—In these times of slack occupation the experimental deductions of investigating economists become valuable. A working mechanic with reduced pay, I have tried hard to keep up with the times by lessened expenditure. Having read the newspaper accounts of the man who lived on \$5 a year, gaining twenty pounds, under a regimen of corn meal, we tried that article but found it insipid, and finally nauseous. The indorsement of buckwheat as a sustaining food by an eminent judge induced us to try it; we found buckwheat non susceptible of variety in cooking, and we soon "stalled" on slapjacks. Potatoes failed to keep up our bodily strength.

Next we tried oat starch, with this result: My wife, son and self confined ourselves to rations of three pints of thick porridge per day, varying the "dip" dressing with butter, sugar, nutmeg, lemon-juce or molasses. We enjoyed excellent health, with regular digestion. At the expiration of two weeks, I found myself four and a quarter pounds heavier. My wife had gained three pounds, while the lad had increased over five pounds. Our food outlay for fourteen days was exactly *two dollars and eighty cents*, or less than *seven cents* per day for each person.

We are now pursuing the same course, with an occasional "mixed meal."

INVESTIGATING ECONOMIST.

Semi-annual Dividend of THREE PER CENT has been declared, payable on and after the 13th instant. Transfer Books closed until after that date.

DAVID GINTHER, Secretary.

ALL CREEK AND ALLEGHENY RIVER
RAILWAY CO.

NOTICE.—The Committee representing Bondholders, Stockholders and certain creditors of the C. and A. R. Railway Co., have directed, under the terms of the agreement, that twenty-five cents on each and every share of capital stock of said company duly registered shall be paid.

Now, therefore, notice is hereby given that the undersigned Treasurer, appointed by said Committee, will receive said assessments, and that unless the same shall be paid within twenty days from this date, all interest of non-paying Stockholders will be forfeited, or waived by the terms of said agreement.

JOHN W. MOFFLY,

Treasurer for Committee,

Manufacturers' Nat. Bank, Phila.
January 11th. 1876. smwsmwstu§

OFFICE OF TWEELETH ST. MARKET CO.

PHILADELPHIA, JANUARY 7TH. 1876.

A meeting of the Board of Managers held on SUNDAY, a Semi-annual Dividend of FIVE PER CENT, was declared, payable on and after Friday, 23d instant, at No. 129 South Seventh st. W41*273

JOSEPH PAXSON, Treas.

THE NEW JERSEY

FIRE, MARINE AND INLAND INSURANCE COMPANY

Camden, N. J. 313 Walnut st., Philadelphia, Pa.
PAID-UP CAPITAL, \$201,100.

T. AUDENRIED, President.

GEORGE W. SIMONS, Vice President.

FIRE INSURANCE ONLY.

ASSETS,

THE PLAGUE-STRICKEN SHIP

1875

TWELVE MEN DEAD AND TWENTY-TWO SICK WITH SCURVY ABOARD THE BREMEN, BOUND FROM LIVERPOOL FOR SAN FRANCISCO—THE STORY OF THE AWFUL PASSAGE.

[From the San Francisco Bulletin, August 18.]

A brief note in last evening's *Bulletin* stated the fact that the English ship Bremen was at anchor on the bar with her crew disabled, and that a tug had been sent to her assistance. Since that time the ship has been towed into the harbor, and the full details of the terrible story are laid before the public. The memoranda furnished by the officers simply states that the ship sailed from Liverpool February 6, 190 days since, and there is no mention of her having touched at any port on the way. The memoranda records the death of twelve men, all colored except one, and names "affection of the throat" as the cause of the mortality. A reporter, who boarded the ship, gives the following particulars regarding the voyage, derived from the officers: The owners of the ship are among those assailed by Mr. Plimsoll as unscrupulous money-makers, who neither care whether their ships swim or sink, provided they are able to grab the insurance. At the time the Bremen sailed crews were difficult to obtain, and colored men were shipped—fifty of them. The whites on board comprised the captain, three officers, the carpenter, steward, and sailmaker, and two stowaways.

A few days after leaving Liverpool one of

than "sweet seventeen." We are
latest numbers of *L'Univers Illustré*
and *Le Petit Journal pour Rire*, published
in Paris.

GENTLE KANSAS.

[From the Rocky Mountain (Denver) News.]

Our pious folks shudder with cold chills when they read in the papers that Mollie Russell, or Mary Brown, or Lizzie Greer has been shoved into a cell for drunkenness or vagrancy, or both, but Kansas City furnishes a scene beside which this sort of punishment is high civilization and refinement. Nine old women, condemned as vagrants, are daily taken out to break stone in the streets, while a guard stands over them with pistol and cane to keep them steadily at work.

DUTY OF AUTHORS.

The artist, it is often said, should not be condemned to write for school girls. Certainly not; but to use such an argument on behalf of vice is simply to say that we ought all to get drunk because we are not all bound to retire to a cloister. "You," we say, "are a wretched debauchee." "Well," it is replied, "I can't be a milksop." There are, luckily, other alternatives. To the doctrine that novels should be written for men as well as school girls we should add that there is only one class of human beings for whom they should not be written. That is the class who have become men, but have ceased to be manly. Nobody should compose poems for human beasts. Prudery is a bad thing; but there is something worse.—*Foreign Review.*

copy to
hums

the men died of pulmonary consumption. Before reaching the Horn scurvy developed itself in unmistakable symptoms among a number of the crew, and off the Horn the disease had reduced the crew so much that a temporary shelter was rigged on deck and five or six men were employed in active duty with the others resting below, and some of them detailed for relief on call. When the ship got into warm latitudes the reaction from the cold weather off the Horn was violent, and, as the captain expressed it, "the colored men dropped off like sunflowers." The last of the twelve who died was dropped overboard in sight of port. Another fortnight at sea and the mortality might have been doubled, as only two of the colored men were able to keep their legs on deck. The vessel was well provisioned; there was not only the ordinary amount of beef and pork salted, but a plentiful supply of canned vegetables and Australian mutton and anti-scorbutics. The mutton up to the time of reaching the Horn was served twice a month, and in rounding the Horn twice a week, thereafter three or four times a week. Lime juice was given in triple doses, and it lasted well throughout the voyage. Captain Leslie says that he is skilled in ship medicine, and is utterly at a loss to account for the prevalence of scurvy, unless it be that the crew before being shipped had come off a long voyage and were thus peculiarly susceptible to attack. His log shows that a number of them refused to take lime juice, and persisted in the refusal at the penalty of death. Despite the length of the voyage, the provisions lasted in sufficiency for all with the exception of the flour, and as a consequence of this the supply of bread was reduced by one-fourth. The men who were sick had a proper change in their rations—rice, sago, preserved potatoes, oatmeal, and other vegetable diet being served to them regularly, together with medicines, of which latterly the supply ran short. As death after death occurred the crew were greatly scared, and seemed to have a premonition that few of them would outlive the voyage. The funeral services were read by the captain with appropriate solemnity in every instance, all the crew being mustered aft, and at the conclusion the body was dropped overboard, shrouded in blankets and bedding. During the latter part of the voyage it became difficult in the extreme to navigate the vessel and to take advantage of the winds. The white men aboard were all of the crew the captain could rely upon, and these were all enfeebled by extra work and want of sleep. Had the captain put into Valparaiso and selected a fresh crew, he would probably have saved the lives of a number of his men and brought his vessel quicker to port. The British consul visited the ship so soon as her terrible condition was known, and measures were immediately taken for the removal of the sick men to the United States Marine Hospital, which was done to-day. Captain Leslie has demanded an investigation of the circumstances of the voyage, and the quantity and quality of provisions and medicines on board, which will be held as soon as circumstances will permit.

estimated at less than

always upon a constantly diminishing basis, now much less than \$400,000,000. Such are, as nearly as I can estimate them, the results at which we have arrived at the close of that ten years' pursuit of gold under difficulties instituted by Mr. Secretary McCulloch. What, however, are we now doing? Are we enlarging the base or diminishing the height of the superstructure? Directly the reverse. Since the adjournment of Congress the Secretary has added \$20,000,000 to this latter, the proceeds of which are to be applied toward compelling our people to use silver tokens so adulterated as to prevent their exportation, in place of the cheap and inexpensive paper tokens now in use. Twenty millions of silver are now locked up in the Treasury awaiting the time when resumption of some kind may safely be attempted, and likely, under present management, there to remain until the final day of judgment, bearing interest at five per cent. for all that time, long as it may prove to be. From day to day we are told of the absolute necessity for resumption as the means of maintaining the country's credit. What, however, now remains of it? Our agents have been for months employed abroad, at heavy cost, in negotiating an exchange of loans not greater in amount than the foreign loan quietly negotiated in a single month by the apparently almost ruined France. Germany holds \$250,000,000 of bonds on which interest is no longer paid. Railroad stocks have ceased to find a market abroad. Our brokers and bankers have, by disgraceful failures, become now so much discredited that the public press of Europe announces a determination to have nothing further to do with them. Never in the world has there been such a collapse of credit as that which has taken place under the contraction system so suddenly adopted in the summer of 1865; never a greater contrast than in the course pursued by the intelligent and honest Finance Minister of France, in the midst of all her troubles, and that pursued by our Secretary at a time when the country had emerged from a great war with a credit such as until then it never had enjoyed, and almost equal to that of any other country of the world. The trouble under which the country labors consists in this:

First. That we have foreign debts and bank debts amounting to little short of \$3,000,000,000, resting on a greenback basis of less than \$400,000,000, the whole constituting a great inverted pyramid.

Second. That our foreign debt is annually increasing to the extent probably of \$200,000,000, and that every dollar of it may, at the will of the holders, be transferred here for sale, becoming thus a debt payable on demand.

Third. That the Treasury is daily contracting the foundation, while adding to the elevation, with daily increasing danger that the whole may speedily topple over, spreading ruin to an extent exceeding anything we hitherto have known.

Fourth. That faith in the future—that confidence which, according to Richelieu, the most astute of politicians, constitutes “a capital upon which we may always draw”—has almost ceased to exist, and that, as a consequence, mills, factories, furnaces, and mines no longer give employment to hundreds of thousands who would gladly

(2.) The effect of starvation on the temperature of the various animals experimented on by Chossat was very marked. For some time the *variation* in the daily temperature was more marked than its absolute and continuous diminution, the daily fluctuation amounting to 5° or 6° F., instead of 1° or 2° F., as in health. But a short time before death, the temperature fell very rapidly, and death ensued when the loss had amounted to about 30° F. It has been often said, and with truth, although the statement requires some qualification, that death by starvation is really death by cold; for not only has it been found that differences of time with regard to the period of the fatal result are attended by the same ultimate loss of heat, but the effect of the application of external warmth to animals cold and dying from starvation, is more effectual in reviving them than the administration of food. In other words, an animal exhausted by deprivation of nourishment is unable so to digest food as to use it as fuel, and therefore is dependent for heat on its supply from without. Similar facts are often observed in the treatment of exhaustive diseases in man.

(3.) The symptoms produced by starvation in the human subject are hunger, accompanied, or it may be replaced, by pain, referred to the region of the stomach; insatiable thirst; sleeplessness; general weakness and emaciation. The exhalations both from the lungs and skin are fetid, indicating the tendency to decomposition which belongs to badly-nourished tissues; and death occurs, sometimes after the additional exhaustion caused by diarrhoea, often with symptoms of nervous disorder, delirium, or convulsions.

(4.) In the human subject death commonly occurs within six to ten days after total deprivation of food. But this period may be considerably prolonged by taking a very small quantity of food, or even water only. The cases so frequently related of survival after many days, or even some weeks, of abstinence, have been due either to the last-mentioned circumstances, or to others less effectual, which prevented the loss of heat and moisture. Cases in which life has continued after total abstinence from food and drink for many weeks, or months, exist only in the imagination of the vulgar.

(5.) The appearances presented after death from starvation are those of general wasting and bloodlessness, the latter condition being least noticeable in the brain. The stomach and intestines are empty and contracted, and the walls of the latter usually appear remarkably thinned and almost transparent. The usual secretions are scanty or absent, with the exception of the bile, which, somewhat concentrated usually fills the gall-bladder. All parts of the body readily decompose.

stance named legumen, which is obtained especially from peas, beans, and other seeds of leguminous plants, and from the potato, is identical with the casein of milk. All these vegetable substances are, equally with the corresponding animal principles, and in the same manner, capable of conversion into blood and tissue; and as the blood and tissues in both classes of animals are alike, so also the nitrogenous food of both may be regarded as, in essential respects, similar.

It is in the relative quantities of the nitrogenous and non-nitrogenous compounds in these different foods that the difference lies, rather than in the presence of substances in one of them which do not exist in the other. The only non-nitrogenous compounds in ordinary animal food are the fat, the saline matters, and water, and, in some instances, the vegetable matters which may chance to be in the digestive canals of such animals as are eaten whole. The amount of these, however, is altogether much less than that of the non-nitrogenous substances represented by the starch, sugar, gum, oil, &c., in the vegetable food of herbivorous animals.

The effects of total deprivation of food have been made the subject of experiments on the lower animals, and have been but too frequently illustrated in man.

(1.) One of the most notable effects of starvation, as might be expected, is loss of weight; the loss being greatest at first, as a rule, but afterwards not varying very much, day by day, until death ensues. Chossat found that the ultimate proportional loss was, in different animals experimented on, almost exactly the same; death occurring when the body had lost two-fifths (forty per cent.) of its original weight.

Different parts of the body lose weight in very different proportions. The following results are taken, in round numbers, from the table given by M. Chossat:

Fat loses	93 per cent.
Blood,	75 "
Spleen,	71 "
Pancreas,	64 "
Liver,	52 "
Heart,	44 "
Intestines,	42 "
Muscles of locomotion,	42 "
Stomach loses,	39 "
Pharynx, Œsophagus,	34 "
Skin,	33 "
Kidneys,	31 "
Respiratory apparatus,	22 "
Bones,	16 "
Eyes,	10 "
Nervous system,	2 " (nearly).

Milk - Lactones
& night-fungus -

VERDICT ON SAUSAGE POISONING.

The Butchers Exonerated by the Coroner's Jury—How they Run an Inquest Now.

"Death in consequence of eating foul or decomposed sausage, which had been picked up from a pile of offal in the rear of No. 2604 Frankford road. The jury fully exonerate Obadiah Leaser and Jacob Hess from all censure, as the sausage had been thrown on the pile and picked up by the boys." This was the verdict of the Coroner's inquest yesterday, held on the body of little George Koenig, who died on Friday last, from the effects of eating bologna sausage. Dr. F. F. Maury testified to making a post-mortem examination on the child, who was three years of age. The pupils of the eye were dilated and there was an excessive pallor of the face; the abdomen was distended by gas, the intestines were pale, and the brain was congested. A letter was read from Dr. Henry Leffman, of Jefferson College, who made a chemical examination of the stomach and intestines, as well as of the remains of a dog which had been poisoned by a piece of the sausage. He says:

The pieces of sausage are somewhat dry and hard, but do not show any mould or fungus; they have a disagreeable odor, which I believe they have acquired from the substances with which they were in contact. Examination of the sausages and of the contents of the boy's stomach, and also the vomited matter, fails to show the presence of any of the metallic poisons. When, however, a close examination is made of the character of the materials in the child's stomach, there is found a very considerable amount of deep-green mouldy meat, which proves that the portion of sausage eaten by this child was much more spoiled and decomposed than is the case with samples sent. The stomach was much distended, but very slightly injected. The stomach of the dog was found filled with well-chewed food, and not inflamed; the viscera was normal. Upon reviewing these facts I am of the opinion that the violent symptoms that have been produced by these articles are not due to the introduction of any of the common poisons, but to the peculiar decomposition which they have undergone. Articles of food of a complex nature are liable to undergo chemical changes of an obscure nature, by which they acquire specific and virulent poisonous properties. The particular substances which are produced in these cases have never been isolated or studied, and we are, therefore, without the means of identifying them by chemical tests. The various authorities on toxicology give numerous instances of ordinary food, such as fish, cheese, rich pastry, etc., acquiring irritant or acid properties, but give no methods of chemical examination save the negative method of establishing the absence of the ordinary poisons.

Dr. Maury then read an abstract from Wharton and Stille, showing that since 1860 no less than 400 deaths have occurred in Wurttemberg from eating blood-puddings and sausages. In the opinion of Dr. Maury, death was in consequence of eating foul or decomposed sausages containing a poisonous material.

Dr. Leffman then announced his official results as to the

OXYTROPIS LAMBERTI, (said to be poisonous to cattle.) Recently some specimens of a plant sent from Colorado by Dr. P. Moffatt, assistant surgeon, U. S. A., to the office of the Surgeon-General, were submitted to this Department for name, accompanied by the following extract from the report of Dr. Moffatt:

Cattle-men inform me that a weed grows among the grass, particularly in damp ground, which is poisonous to horned cattle and horses, and destroys many of them. From the manner in which they describe its effects upon the animals it must be of the nature of a narcotic, and they assure me that cattle, after having eaten it, may linger many months or for a year or two, but invariably die at last from the effects of it. The animal does not lose in flesh apparently, but totters on its limbs and becomes crazy. While in this condition a cow will lose her calf and never find it again, and will not recognize it if presented to her. The sight becomes affected so that the animal has no knowledge of distance, but will make an effort to step or jump over a stream or an obstacle while at a distance off, but will plunge into it or walk up against it upon arriving at it. The plant was pointed out to me, and seems to be related to the *Lupin*.

The plant submitted to us as the one in question was the *Oxytropis Lambertii*, a plant of the pea-family, nearly related to *Astragalus*, and also to the *Lupin*. It grows in considerable abundance upon the elevated plains near the mountains, and extends up into the mountains to the elevation of 7,000 or 8,000 feet. It is perennial and grows in small clumps, the leaves being all at the base, and sending up a few erect flower-stalks, seldom over a foot high, which have a spike-like raceme of rather showy flowers, varying in color from cream to purple. These are succeeded by short, stiff, pointed pods, which contain a number of small, clover-like seeds. The effects ascribed to this plant are quite similar to those produced by several species of *Astragalus* in California, as mentioned in several of the monthly reports of this Department. (See Monthly Report, October, 1873.) Careful observations should be made by residents of the region where this plant grows to ascertain if it produces the effects ascribed to it.

A VALUABLE GRASS FOR THE SOUTH AND SOUTHWEST.—Specimens of a grass have been sent to us from Texas by Mr. Pryor Lee, concerning which he makes the following remarks:

1. General experience has not fully tested the qualities of this grass, but some characteristics are recognized by many practical observers in Southwestern Texas.
2. In this region this grass, in the condition of well-cured hay, is regarded as more nutritious than any other grass.

Plant poisonous to Cattle?

U. S. Agric. Department Report
1876.

MICROSCOPIC OBSERVATION.

By THOMAS TAYLOR, MICROSCOPIST.

BLACK-KNOT OF PLUM AND CHERRY TREES—(Continued.)—Having recently received from a gentleman of New Jersey, Mr. Abram McMurtre, some excellent specimens of black-knot taken from plum and cherry trees of different ages, I resumed my investigations of that disease with very satisfactory results. A portion of the fungus being removed from a specimen of the black-knot which had grown on a plum-tree about seven years old, and being submitted to an examination by the microscope, at a very low power, exhibited forms of fruit (perithecia) as seen at 8. When viewed in section by a higher power, it appears as at 9; and in top view as at 10, showing an indentation in each perithecium.

When a perfect specimen, as seen at 9 or 10, is submitted to the action of nitro-muriatic acid for about thirty minutes, a slight decomposition of the acid takes place, indicating that the resinous or oily matter of the perithecium becomes oxidized. These strong mineral acids have no destructive action on the organic structure of the perithecium, although they have the property of bleaching it in some degree, thus rendering it translucent, and making its cellular structure visible. If ammonia is added in drops to the specimens, after having been treated with acids, their albumenoids become pliable. This process is especially valuable when applied to matured and dry specimens; 6 represents a very highly magnified specimen of a perithecium, a part of which is in section and represents the internal arrangement of the asci and sporidia in them. From my recent experiments on black-knot I am now able to demonstrate its structure. If a perfect perithecium which has been treated with acid and ammonia, as previously described, is gently bruised on a microscopic glass slide, by any of the well-known modes, the asci containing the true sporidia will escape, and frequently the sporidia will be seen in profusion on the glass. I have counted as many as ten sporidia in one ascus. When the perithecium is very pliable, and the interior mass of

climates, and said to be richer in gluten. Judged, however, by the sensible properties of bread, there is some reason to doubt these conclusions. The analyses of wheaten flour produced in different climates and soils have not been sufficiently numerous to settle the question.

According to the analyses of Payen,* the relative amount of constituent principles contained in different varieties of wheat, besides about 15 per cent. of water, is as follows :

	Hard Wheat (Venezuela.)	Hard Wheat (Africa.)	Hard Wheat (Yaganrog.)	Semi-hard Wheat. (Drie.)	White or Soft Wheat. (Tuzelc.)
Nitrogenous matter.....	22.75	19.50	20.00	15.25	12.65
Starch.	58.62	65.07	63.80	70.05	76.51
Dextrine, &c.	9.50	7.60	8.00	7.00	6.05
Cellulose....	3.50	3.00	3.10	3.00	2.80
Fatty matter.	2.61	2.12	2.25	1.95	1.87
Mineral mat- ter.....	3.02	2.71	2.85	2.75	2.12†
	100.	100.	100.	100.	100.

These analyses of wheat are not, necessarily, indices of the quality of the flour produced from the same—this depends upon the care used in the preparation, the separation or otherwise, of the cortical portion of the grain ; the integrity of the starch granules and other conditions known to experts, which, all other things being equal, may render one brand far superior to another. And the same may be said of prepared foods from wheat in other forms, such as those represented in our advertising pages.

It is our purpose hereafter to show, by careful comparison and accurate analyses, the nutritive value of our best American flours, so far as may be dependent upon the *mill*, as well as the conditions of climate and soil concerned in the production of the wheat ; and we venture to opine in advance that the former condition—its proper treatment in the mill—is no less essential to good flour and its nutritive value, than the climate in which the wheat is grown.

POISONED BY EATING CANNED SALMON.

YONKERS, N. Y., June 25, 1875.

To the Editor of THE SANITARIAN :

A little after twelve o'clock, Tuesday morning, June 22d, 1875, I was called to a family of five persons, all of whom were taken vomiting, and (all but one) purging severely, about three hours after eating some canned salmon. All recovered ; but some of them were nauseated

* Substances Alimentaires, Paris, 1865. p. 265.—*Favy*, p. 225.

† Deviation of + 2.0. Possibly an error in the amount of the starch.

and had griping pains in their bowels for about eighteen hours.

The can had been opened two days previous, and some had been eaten at that time without any unpleasant result. They stated to me, that they had frequently had cans of salmon open for several days, kept in a warm place, and then eaten from them without any bad effect.

The can of fish was the *Star Brand*; packed by Jos. Hume, Scotchler and Gibb, Agents, San Francisco, Cal.

The can, when I saw it, was empty; but it had a very strong fishy smell, much stronger and more disagreeable than any other can of salmon that I have seen opened. The question naturally arises, was this fish hurt before packing, or did this change take place after opening the can. If the latter is the case, the packers should put upon their labels the proper cautions. If the former is the case, there ought to be some means of punishing the offenders.

G. B. BALCH, M.D.

It is well known that certain fish, in hot climates especially, are always poisonous, and that certain other kinds, and in other climates, are occasionally so, or at certain seasons. And again, individuals are peculiar in this respect. Some persons can eat fish with impunity which is poisonous to others; and many persons are liable to nettle-rash, or to various nervous disorders consequent upon a fish diet, which they would otherwise wholly escape. But *salmon*, when sound, and if potted unadulterated, is not only one of the most choice varieties of fish, but ordinarily wholesome.

The mischief of canned fish, as of meats, is commonly due to one of two causes—putrefaction, or adulteration in the process of putting up. In the case before us, the cause seems to have been putrefaction, as, when the can was first opened, the fish was partaken of without any unpleasant effects. Canned fish and meats of every kind are exceedingly prone to be attacked by mould and speedy putrefaction on exposure to the air, and especially so in warm weather. Such food is dangerous. The symptoms of poisoning from it are usually such as described in this case—allied to those of cholera.

The adulterations of canned fish and meats are generally added to preserve color, and there is reason to fear that salmon is sometimes so adulterated—*venetian red* and *red lead* being the most common means. We regret that Dr. Balch did not send us a sample of the fish. We fully agree with him, that not only the brand, but special directions and precautions should accompany all such packages, and the proprietors thereof should be held to a strict accountability for all such acts of commission and omission on their parts as are, or may be followed by poisonous results.

56281
in their food, occasions a softening and distortion of the bones of the body. By varying a water supply it might be possible to alter the physical organization of a population; and in future ages, from the examination of the bones of bygone generations, the character of the water they were in the habit of drinking might perhaps be deduced.

Much attention has of late been directed to organic impurities in drinking-water, but those of an inorganic nature have been almost overlooked, although, as was pointed out in a paper read by Mr. W. J. Cooper at the last meeting of the British Association, serious mischief has in many instances resulted from the incautious use of deep spring waters. At Hendon, England, an Artesian well was bored to supply water for some valuable horses which were being reared there. The water was bright-looking, pleasant to the taste, and quite free from any organic impurity; the foals, however, that drank it soon died, and the whole stud were seriously affected with diarrhoea. Professor Way, one of the Royal Commissioners of Water Supply, analyzed the water, and it was found to contain sulphates of magnesia and soda in considerable quantity. On discontinuing the use of the water the disease was arrested. A similar case occurred at Rugby, but in that instance human beings were the sufferers. The water from an Artesian well free from organic impurity was hailed with satisfaction on that account; the community, however, were attacked with diarrhoea caused by the sulphate of magnesia, or Epsom salts, in the water, and the supply had to be discontinued, as there is no known method of freeing water from sulphates.

In the paper to which we have referred above, Mr. Cooper remarks:—

“The opinions of some leading authorities on water supply have undergone considerable modification recently. A few years ago Dr. Frankland returned all solid matters in water as impurities, in the analyses he made. I was therefore much surprised to hear him recommend as a supply to a district containing 14,000 inhabitants a water proved by analysis to contain $12\frac{1}{2}$ grains of anhydrous sulphate of magnesia per gallon, equal to 25 grains per gallon of Epsom salts. This evidence was given last session before a committee of the House of Commons. Dr. Frankland stated that it was absurd to say that a water containing such a quantity of Epsom salts could be objectionable from a dietetic point of view. Fortunately for the health of the people the parliamentary committee refused to allow the district to be supplied with the Epsom salt solution. The water of St. Ann's Well, at Buxton, the slightly purgative quality of which is considered as one of its merits, contains an amount of magnesia equal to 13 grains of Epsom salts per gallon. It is known that goitre and other throat and glandular affections, and even idiocy, have been attributed to inorganic salts in drinking-water. We know that the human system is easily deranged by a change in the drinking-water. The spa and chalybeate waters at the favorite places of resort have been renowned for ages for their medicinal virtues. If the entire organic structures of the human body are liable to alteration when excess of mineral matter is introduced into the system, it is essential that health-seekers at these medicinal springs should place themselves under medical supervision. And one of the first considerations in the inauguration of a water supply should be to insure a perfect freedom from excess of any mineral except those comparatively harmless ingredients, chloride of sodium and carbonate of lime.”

In the discussion which followed the reading of this paper, several leading sanitary officers gave the results of their experience, which was almost unanimously in accordance with the views presented. It appeared to be the general opinion that the importance of the subject had not been justly appreciated. It is not enough that water should be free from organic impurities; it must also be free from any mineral contamination that would in course of time act injuriously on those who constantly use it.

Journal of Chemistry.

Mineral impurities
(excesses)
in
Water

BOSTON, NOVEMBER, 1875.

NUMBER 5.

effects, the battery for the purpose being by far the best and most powerful ever made, consist-

palliative, and can by no means prevent renewed attacks. If we consider, in the application of oxygen gas, its physical action, as already discussed, we shall readily conclude that the inspiration of oxygen is in most cases useless, and that but little — and only in few cases — can be expected from its therapeutical application."

It has been suggested that oxygen should be inhaled by those who ascend to great heights in mountain climbing or in ballooning, to counteract the effects of atmospheric rarefaction. P. Bert exposed himself and others, in a suitable apparatus, to air far more attenuated than is found at the greatest altitudes hitherto reached. He states that the difficulty of breathing and the symptoms of suffocation which appeared when the barometer indicated from 10 to 12 inches were relieved by a single inspiration of pure oxygen. It was found more advantageous, however, to dilute the oxygen with atmospheric air. On a balloon voyage which Croce-Spinelli and Sivel made in March, 1874, they took with them mixtures containing 45 and 75 per cent. of oxygen. With the aid of these they were able to conduct physical observations without bodily inconvenience at a height of more than 6000 metres (19,680 feet). It is probable that oxygen may prove of some value in certain exceptional circumstances like these.

It was our intention to refer to the possible industrial and medicinal applications of ozone, which is a modification of oxygen, but the length to which this article has extended forbids. We may resume the subject at a future time.

THE PHYSIOLOGICAL EFFECTS OF THE WATER WE DRINK.

SOME interesting experiments have been made in France by M. Papillon, with a view to test the action of certain phosphates, administered in distilled water, on the bony structure of various animals. These were virtually experiments on artificial drinking-waters, and they prove that mineral matter in dilute solution is capable of being assimilated by the body, the structure of which may thus be materially modified. Indirectly they show that the effect of altering the chemical composition of the water supply of a community may involve questions of great importance to the physical development and health of its members. The very composition of our bones is affected by the quality of the water we drink. If the water contains lime, that substance will be taken up and will appear as phosphate of lime in the bones; if it contains strontia or magnesia, these will appear as phosphates of strontia or magnesia. If the water is deficient in mineral matter, there will be a corresponding deficiency in the constitution of the bones. It is said that such instances have occurred in Holland, in districts where the inhabitants can obtain only rain water for drinking purposes. This fact, probably combined with an absence of lime

AN ARTESIAN WELL.—The *Brewers' Gazette* states that, after great expense, commendable perseverance, and much patience, Messrs. Quinn & Nolan, of New York, have succeeded in sinking an Artesian well which yields 800 barrels of water every day. The water is as pure as crystal, and has a temperature of 50° Fahr. It will be used both for mash and for cooling. The machinery of the well is reported perfect, throwing up a column of water 250 feet long through an eight-inch pipe with a steadiness and ease very remarkable. The enterprise thus far, has cost Quinn & Nolan 6,000 dollars, and it is calculated that the expenditure of this sum will effect a saving of some 65 dollars per day, heretofore expended in ice for cooling off-ale.

Lane Ready, Brewer, also —

1874

He functionary. But if valid objections can be raised against this antiquated custom, how much more so is it the case with another kindred institution quite as much out of date, and which has become a perfect plague to the viticulturists! It is called the *grappillage* or gleaning—literally meaning the “pillage of grapes,” and owes its legal existence to the same Rural Code of the last century. It allows the poor of the locality to glean the fruit that has been overlooked by the vintagers, or purposely left uncut by them as over-ripe or not sufficiently matured, which in either case might have a deleterious effect on the quality of the wine. If carried

WATER-SUPPLY CONGRESS.

At the International Congress for Improving the Supplies of Drinking Water, at Amsterdam, upwards of forty members took part, including representatives from France, Germany, England, Holland, Belgium, Portugal, and Java. Official authorization of the Association had been received from Holland, France, and through Prince Bismarck, from Germany. Mr. Edwin Chadwick presided, and Dr. Mouat, read in French the presidential address, which stated the general conclusions at which sanitarians have arrived in England for the extension of improved supplies of potable water.

These included, first, the constant service system and avoiding storage systems which cause stagnation. Second, the prompt removal of waste water through self-cleansing drains and sewers, and applying it direct to the land. Third, abandoning river sources of supply, containing besides the sewage of towns, the surface washing of lands, especially high-manured lands, and substituting spring sources, or from primitive rocks or clean surfaces. Where good natural springs are not within reach create artificial ones. In a prison supplied with the sewer-tainted water of the River Thames, cases of typhoid fever were frequent. The supply was taken from springs and the fever disappeared. In another prison cases of goitre appeared. The water was changed, and goitre ceased. The most important collective test as to the value of pure water supplies are those on board our steamships of war. All are now supplied with water distilled from sea-water duly aerated. There is no doubt that the superior quality of the water thus supplied to the Royal Navy is one of the chief factors in contributing to the greater healthiness of the sailors of the Royal Navy over those employed in the mercantile marine.



Trade

Volume 2.
Number 18.

NEW

Entered at the Post Office at New York, N.Y., as second class matter.

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Sooner or later, we shall have to take up the suggestion made by Chief Engineer Birkenbine when he was in office. Except in case of an absolute necessity, no great city but Philadelphia chooses to depend on pumping machinery for its water supply. They all have preferred the aqueduct system, which costs more at first but saves money in the long run. Chicago, St. Louis, and perhaps Cincinnati are forced to pump the water they use. But Boston, New York, Brooklyn, Glasgow, Manchester, London, and all the best managed cities of Europe employ aqueducts. Philadelphia has plenty of upland sites for a great reservoir within manageable distance of the city. That in the Perkiomen Valley, pointed out by Mr. Birkenbine, is by no means the only one, although it possesses some especial advantages. A single aqueduct, connecting such a reservoir with the city, would cost a handsome sum of money, would leave us a score of discredited pumps to sell as old iron, and would furnish but little political patronage in the employment of officials. But it would save hundreds of lives every summer, and, in the long run, would save money as well to the City Treasury.

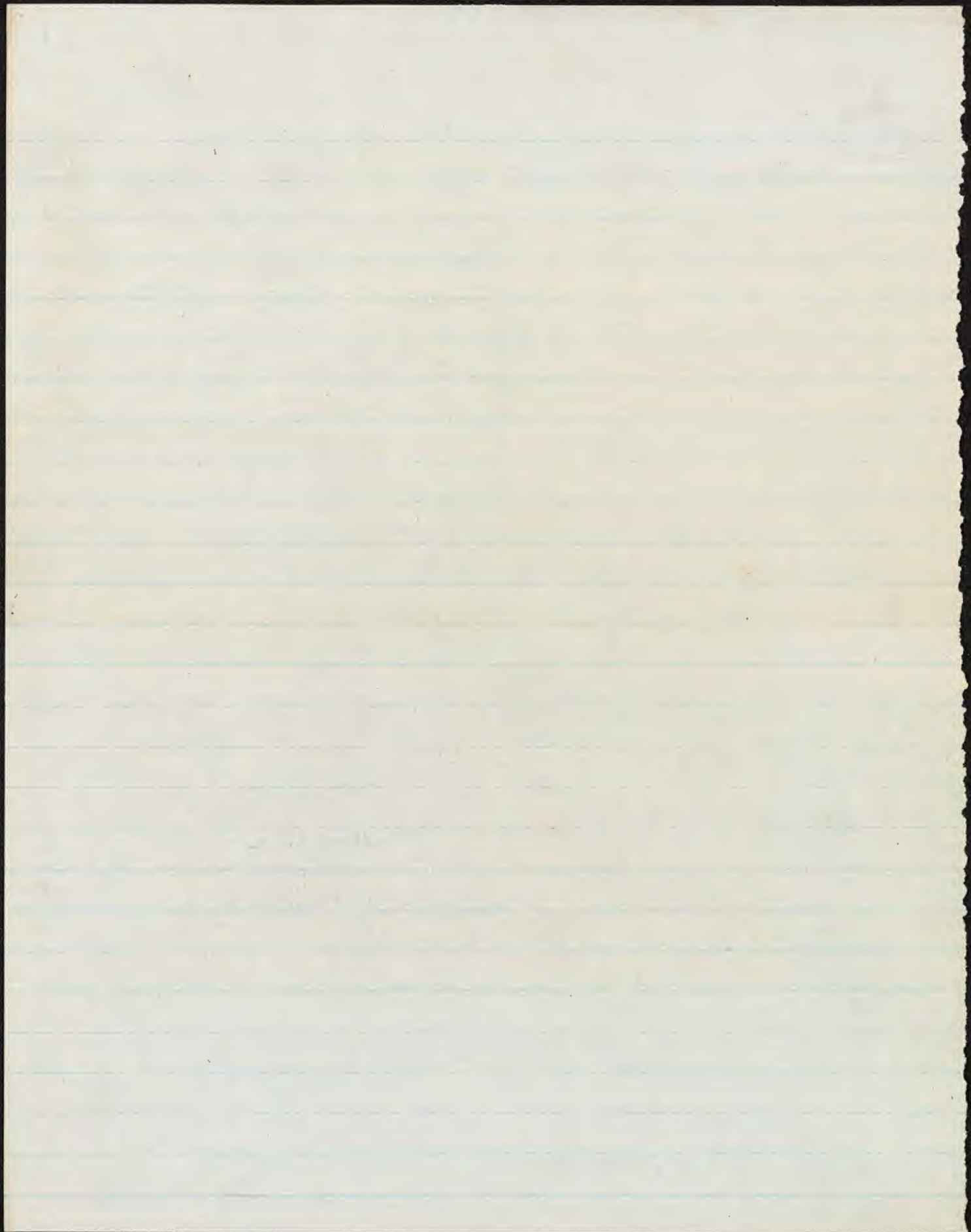
W. C. Fairwater
well, in cylinders —

& a number of wells

In Indiana the Democratic situation is not improved. The sharp practice by which the popular vote in regard to the constitutional amendments was set aside, has created so bad an impression, that the Democratic leaders are now anxious to retreat that step. They even propose that the Governor shall call together the Legislature, and have a law passed to submit those amendments again to the popular vote before the October election day shall come. We suspect that there are several reasons for this. They, no doubt, discover a good deal of indignation on the part of the people who went to the polls to vote for the amendments, who found their votes cancelled by a clearly partisan decision in the State court,—a decision that must have been ready before the case was heard, as it was too lengthy to have been written in the interval which preceded its delivery. But they are also awakening to the fact that keeping Indiana in the front rank as an October State may prove a bad blunder, as a Republican victory in that State is seen to be far from impossible, and as it would certainly foreshadow the result in November. Besides their solid South,

New York if they are to

German sanitarians have especially favored the use of spring water as a drink. [Vienna, since 1873, has been supplied from two Alpine springs, brought from a considerable distance by aqueducts.] In 1874, the German Public Health Association affirmed by resolution, that only spring water, spontaneously flowing or collected in wells, is admissible for such a purpose. At an International Water Supply Congress, meeting at Amsterdam in 1879, E. Chadwick, its presiding officer, asserted it to be the general belief of English sanitarians, that ~~for~~ water from natural or artificial springs should always be preferred to river water. This is undoubtedly true in a country crowded with population, ^{are} as most parts of Great Britain. ~~A country house is fortunate~~



Wanklyn's report on the Aldgate pump
This case led to an examination of the other London pumps, and Dr. Frankland states the results in a letter to the *Times*. Samples collected from all the known shallow wells in the metropolis, having been analyzed in the laboratory of the Rivers Pollution Commissioners, were proved, with but two exceptions, to consist chiefly or entirely of the soakage from sewers and cesspools, and some of them actually had a manure value 150 per cent. greater than that of average London sewage! One or two had a slight saline taste, piquant to some water-drinkers, but most of them were bright and palatable, and the pumps yielding them enjoy, for the most part, as high a reputation with street connoisseurs as Aldgate pump has had. (1876)

These facts are worth recording as curiosities of history in this nineteenth century, but we allude to them mainly for the sake of emphasizing what we have more than once urged upon the attention of our readers, namely, that very bad water may not seem to be bad, but on the contrary very good, when judged by its taste and smell. Of two wells in a neighborhood, the one that has the better reputation for purity and flavor may be poisonous; while the other, which is less palatable, may be so simply because it is purer.

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JAS. R. NICHOLS, M. D., *Editor.*

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BOSTON, FEBRUARY 1, 1876.

TYNDALL AND HIS ASSAILANTS.

No one of the distinguished scientists of our time has been so environed by adversaries and assailants during the past two years as Professor Tyndall, and certainly no man has been busier in defending himself. His assailants have been largely theologians: clergymen of the English church, and Catholic bishops. Tyndall, at the Belfast meeting of the British Association, as is well known, boldly launched out in his address into the sea of materialism, and his craft has been fired into by some of the sharpest theological cruisers which are known in any sea. His last act of defence is a broadside fired at the Rev. James Martineau, a distinguished and able Unitarian clergyman, of England.

In this paper, recently published, Tyndall, in language forcible and eloquent, undertakes to vindicate himself from the charges brought against him by Martineau and others, who accuse him of being a materialist. In his Bel-

For some years Chicago was supplied with water from a dirty, filthy stream, or rather canal, called Chicago River. So impure was the supply that filters were constantly used, and Chicago water became a by-word. About 1860 a change was decided upon, and Lake Michigan chosen as the future source of supply. To accomplish this, two miles from shore there was constructed and sunk an edifice made of iron and heavy timber loaded with stone. This building has a diameter of 98 feet. In the centre compartment an iron cylinder is sunk 64 feet, of which 31 feet are below the bottom of the lake, the water being 33 feet deep.

A shaft was sunk on the shore 66 feet below the level, and thence a five-foot tunnel was constructed two miles to the crib in the lake. Since the first a second tunnel has been constructed alongside the first one. New engines and pumps, and a handsome stone tower, were constructed, all of which went down in the fire. Since then others have been constructed.

The city has, however, extended the tunnel under the city at a depth of 60 feet, a distance of three miles, and at its terminus is now constructing a duplicate of the buildings and machinery. The supply of water from the lake will be equal to 120,000,000 gallons daily, and the capacity of the combined machinery 70,000,000 gallons daily. This is expected to serve the city for a few years more, when the supply will be increased. Each new tunnel will furnish 70,000,000 gallons a day.

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We know that when the river is blocked with ice, it takes a very short time for the water to become foul and offensive. The present condition of our water is due to that influence. The water is undergoing a purifying process now, and in a few days it will be in a better condition. To-day I have ordered the plugs throughout the city to be opened to cleanse them.

In answer to inquiries, Mr. McFadden continued:

I have studied the flow of the river Schuylkill. Some people entertain the view that it is like the well of Samaria; but it is not inexhaustible, if you talk about it as a motor or water power. The valley of the Schuylkill contains eight hundred square miles, and a rain fall of 42 inches will average 75,271,680,000 cubic feet or 563,032,166,400 gallons. Don't be deceived by these large figures, for when you divide them you have only 542,533,881 gallons per day, equal to ten inches on the dam.

You come to the question of utilization. In conversation with the gentleman who erected the large wheels at Fairmount, he stated that those were to pump eight million gallons, but they realized about 65 per cent. The smaller ones were rated at six millions, and their average is from 80 to 85 per cent. If we allow for leakage, my own notion is that 60 per cent. is a fair allowance for the work done. We have had at the lowest tide twelve feet head; at the highest tide less than four feet head. Assuming the average to be nine feet, and the lift at ninety feet, you will find that it takes ten pounds on the lever to lift one. Now, if the co-efficient is 65 per cent., you will find that it will take about fifteen gallons of water to raise one. If I were asked in regard to the capacity of the river Schuylkill as a water power to raise water, I should say that one hundred million gallons per day is all that can be relied upon. In order to have this average flow another important question comes in. My attention was called to this very thing by an editorial in the EVENING BULLETIN, last evening, and by Mr. Haworth's communication to Councils in 1873. He proposed that the river at Wissahickon and Flat Rock dam should furnish one hundred million gallons for water power.

I shall require one million and a quarter dollars, with the utilization of the \$750,000 of

Chief Engineer McFadden,
3mo. 31, 1875.

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No. 101 Church Street, City Store

*Schuyler
water, 1875*
*Schuyler
water
1875*

the Frankford loan for mains, etc. I propose to lay mains and build engines at Spring Garden, and with them I propose to supply Frankford and the Twenty-third Ward.

One reason for cutting adrift from the Delaware now is, the time is not a hundred years hence when you will have to go to the Delaware for water.

There is no doubt that water will fine itself or purify itself in seven miles, dropping all its impurities.

To-day the purest water the city enjoys is obtained at Flat Rock Pool, and, while I have not an infallible faith in your lime-water, I have no doubt there is chemical action enough to overcome the acids of the mines.

There has been much interest manifested by the Park Commission with a view to removing the impurities of the Schuylkill. Mr. Schofield assured me that he was arranging matters so as to utilize the water from his mills. He would filter it, and use it for drinking purposes. My notion is, that if the manufacturers along the Schuylkill are approached in a proper manner they would heartily co-operate in purifying the stream.

In conclusion, Mr. McFadden said: There is no provision made for getting the water from the storage reservoir. If it cuts Broad street it will cost \$300,000. It will cost \$750,000 to duplicate the Belmont works. It would require two 5-million engines, and they would take up as much room and cost almost as much as two 10-million engines. It can't be done for less than \$750,000.

I would utilize the Kensington works as often as possible, but I would not advise it being increased. There is no better water in the world than in the Delaware, not even in the Schuylkill.

Having explained his plan thoroughly to the meeting, the Chief said that it now rested with the Water and Finance Committees to finally dispose of the matter. He was willing and anxious to carry out whatever they would direct.

A lengthy discussion ensued, during which the capacity, quality and general availability of the Delaware and Schuylkill rivers, respectively, were made the subject of inquiry. The Chief reiterated it as his opinion that there is no purer water in the world than that in the Delaware, not even excepting the Schuylkill water, and thought that it will not be so many years until the city will be forced to go there for her water supply.

RCH 31. 1875.

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427.

OUR UNPALATABLE CROTON

THE ODOR AND TASTE OF THE WATER THAT WE ARE DRINKING.

What the Consumers Think about It and What the Savants Say about It—The Nostoc or Green Scum that Impregnates the 104,000,000 Gallons Supplied Daily.

For two weeks past the whole city has been forced to drink bad water, water offensive in both taste and smell. The complaint has been widespread, and the results are not to be hastily computed. Whether the water is really detrimental to health or not has not yet been decided by the authorities, but there can be no doubt that sweet tasting and smelling water is very likely to be more wholesome than such water as we have. Perhaps the greatest evil arising from the unpalatable water of the past fortnight is the pretext it has been made for quenching thirst with beverages of the bar-rooms, all of which are infinitely inferior to water as a means of quenching thirst.

To ascertain whether this bad water was in the house of good and bad, high and low, rich and poor alike, a SUN reporter visited many houses in the city yesterday, and tested the water. First he went to the Murray Hill reservoir. The immense enclosure, with its capacity of 70,000,000 gallons of water, seemed almost empty. The water, whose surface was far below the edge of the reservoir, had a greenish tinge, which the keeper of the structure said was nearly "the way it always looked when the sun shone on it." When a passing breeze entered the enclosure and rippled the surface, there was perceptible a faint odor of wood, or straw, or of both combined—an odor hard to define—not unpleasant, but an unmistakable odor.

"She's low this morning," the keeper said; "she always is on a Tuesday, because Mondays are our heavy days, and more water is used than on other days. The reservoir ain't more than half full, now; hasn't got more than 35,000,000 gallons in her. Well, yes, I've noticed the smell and the taste, but it's so most always in the summer, and I guess there ain't nothing unhealthy about it. This reservoir is used as a distributing reservoir. The big one in Central Park is the receiving reservoir, and sends the water down town; we get the surplus, and distribute that. Yes, there's always a current through the reservoir, there's water running in and out all the time."

At 471 Fifth avenue is a fine brown stone house, on the crest of Murray Hill. A portly, matronly woman answered the door bell, and wiped her heated face with her apron. The family were all out of town, she said, but the water had been bad, very bad. Last week it was hardly fit for use, it smelt so, and as for drinking it, her face expressed what she thought. But perhaps the gentleman would like to try it for himself. The gentleman would, and she led the way through the wide basement hall, past a billiard room, to the kitchen. The water was offensive to both taste and smell, smelling just as it smelt in the reservoir, and tasting just as it tastes all over the city. "It is awful bad in my room," said the coachman, who was taking his ease in the hall. "It smelled so I couldn't stand it."

Two blocks below, on the west side of the avenue, the cook was voluble in condemnation of the water. None of the family were at home, but a few days before when they were the water was so offensive that one of the ladies could not drink it, and had to quench her thirst with iced tea instead. "If you'll step up to the butler's pantry I'll show you how bad it is," she said. The water that rushed through the silver pipes in the well-appointed butler's pantry was bad, bad to smell, worse to taste. Iced tea was certainly preferable.

Mrs. A. F. Stewart's pleasant-faced butler answered the bell at the elegant mansion in Fifth avenue. He wasn't aware that anything was the matter with the water. He led the way to where a stream was pouring from a silver pipe into a marble basin; the water was bad. "They ought to get all their water from Lake Mahopac," he said. "There the water is clear and pure; I was up there last summer and saw that the water comes mostly from springs. There is no fault. It was a mistake, I think, to carry away with the old city pumps. There's nothing like good cold well water."

The bartender of the Hotel Brunswick said, as he added the last finishing touches to a most artistically concocted lemonade, "Better have a dash of claret in it, sir. You see the water ain't good. We can't get good water. All through the house they are complaining about it. It smells bad and tastes bad. Try this glass," and he filled a glass from the stream that continually flowed from a pipe behind the bar. The water was bad.

"I don't know nothin' about the water," said a short crop-headed, crimson-faced man who stood behind the counter of a Houston street barroom. "I've heard some of the boys say that it was a little off color, but I dunno. If you want to know how it smells and tastes, why try it yourself. Here." He handed a glass of water from behind the beer-stained counter. The water was bad, in smell and taste like that of the Brunswick's bar; no better, no worse.

A fleshy young man, with a pimply face and very smoothly brushed hair, presided over the liquors in a Bloeker street barroom. He had noticed something queer about the water. "It tasted kinder bilgey," and it looked muddy sometimes. He tasted a glass of water carefully again, pronounced it "bilgey," and handed the glass to the reporter. It was bad.

"Pat, I should say it was pat," said the head of one of the twenty families that occupy a Broome street tenement. "Vy it stink so pat, and taste so pat, dat I don't could drink it some more. Vat you think make it? 'Dead fishes?' The water, as it flowed from the brass faucets in the hall sinks of the tenement, was like that in the Murray Hill mansions. It was bad.

"My customers complain of the bad water," said a Nassau street barber. "They say it smells bad even when put on their faces in lather; and when they are shampooed, and lean over the basin, the smell is very disagreeable."

"The cause of the bad water," said Mr. John C. Campbell, the Chief Engineer of the Department of Public Works, yesterday as he sat in his office in the City Hall, "is this: Two weeks ago Sunday last, the Sunday that we had such a heavy rain here, when two or three inches of rain fell you remember, there was a slight rain in Putnam county, just enough to wash the bits of wood, straw and loose grass into the little streams that flow into the Croton river. Croton lake was low and the rain was not heavy enough to raise the lake so that this rubbish could be carried over the dam. Consequently we are getting the benefit of it now, or rather have been getting it. The worst is over. I don't think there is anything unhealthy about this water. It is only tainted by the dry rubbish that floats on the surface. On Saturday, as soon as I found that the water was getting inferior, I telegraphed to my assistant at Carmel, in Putnam county, to turn on the water from Lakes Glead, Kirk, and Glen-elda. These are lakes of pure, clear spring water. I could also use the water from Lake Mahopac, but there are so many people there that I never use it until later in the season, unless absolutely necessary. The effect of turning on the water from the lakes is already apparent. I was at High Bridge this morning, and the water there was perfectly good, no unpleasantness of either taste or smell. The reservoir in Central Park is our great receiving reservoir. It holds ten days' supply of water for the whole city, and of course if it was full of Croton Lake water it would require ten days for the water from the lake to displace it. Such evils as this of which we are talking cannot be remedied in a day, when the source is up in the country forty-five miles from here. We are doing everything in our power here to keep the water good. Whenever there is a dead end where the water out. A 'dead end' is where a pipe terminates in a cap. Of course the water standing there gets stale. There is always a fire hydrant near a dead end, and by opening it the water from the dead end is forced or blown out. Where there is a continuous network of pipes there is a continuous current, and the blowing out is not necessary. You may rest assured that New York will have pure, sweet water within a very few days.

Prof. Charles F. Chandler, President of the Board of Health, said in regard to the cloudiness and disagreeable odor of the Croton water drunk by New Yorkers: "Almost the same unpleasant condition of Croton water recurs periodically. It probably has never been so disagreeable before now. It is due to the presence of a peculiar species of fresh water algae, called generically nostoc; called by the unscientific 'green scum.' It is a microscopic plant, being perceptible as a plant only under the microscope. It secretes an essential oil that has a disagreeable odor. The presence of the plant in the Croton reservoir does not indicate the impurity of the water that it contains, for the plant is often found in thoroughly wholesome water. Few cities are so fortunate as to the quantity and quality of their water supply as New York. One hundred and four millions of gallons are supplied to the city daily, an average of 100 gallons per individual. The minimum flow of Croton river is 82,000,000 gallons daily. In long droughts a deficiency in the water supply occurs, because the majority of the existing reservoirs have not sufficient capacity. They hold only enough for about ten days' use. By the erection of dams of moderate size in various parts of the region drained by the Croton river and its tributaries, enormous storage reservoirs could be obtained. A reservoir of this kind, planned by ex-Chief Engineer Craven of the Croton Department, has been constructed at Boyd's Corner, Putnam county. The dam crosses the west branch of the Croton river, about twenty-three miles from the great Croton dam. The reservoir contains a thirty days' sup-

ply of water for New York. This reservoir alone would carry the city through the longest drought that is likely to occur.

"The water shed of the Croton river has an area of 839 square miles, and is capable of supplying water to a city of four million inhabitants. The character of the water shed guarantees water of the best quality. Mountains and hills of Laurentian gneiss receive the rain fall, which is filtered by pure siliceous sand and gravel. It leaves the mountains and hills in sparkling springs, whose waters find natural resting places in ponds. From the latter is formed the Croton river, which, being dammed, forms Croton lake. Nowhere along the streams tributary to Croton lake can anything that is likely to affect the quality of the water be found. A few factories have been established on some of its tributaries, but they do not pollute the water. When the snow melts in the spring, and the water scours the frozen earth, it often reaches the city discolored, and excites alarm. But I have never been able to find any sickness resulting from it while in this state.

"During the war there was intense dread that the Croton water supply of New York would be poisoned. But it was shown that to impregnate the one hundred million gallons of water conducted to the city daily with strychnine, the most certain poison available, supposing each pint of water to take up the smallest fatal dose, three and a half tons of strychnine, a quantity that could not be collected in all the markets of the world, would be required, and the public mind was quieted.

"The nostoc, in my opinion, is not harmful. It is unusually abundant in the reservoir now on account of the recent extraordinary hot weather. The plant is a little past maturity, and will die shortly. Then the oil that it contains will be much more offensive than it is. Filters should be generally used. A sponge filter is, in my opinion, the best."

Dr. Elwyn Waller, of the Columbia College School of Mines, whose office it is to examine samples of the Croton water that New Yorkers use, and make a weekly report to the Board of Health, was found in his laboratory. Dr. Waller filled a deep glass jar from a Croton water faucet in the laboratory, and placing it on a table partly covered with white paper, invited the reporter to look into it.

"See," the Doctor said, "how greenish and murky the water is. If I should leave the jar where it is, the surface of the water to-morrow morning would be perfectly green. Here is a vase [showing a slender glass vase containing Croton water with a green surface] that has been undisturbed for a few hours. The nostoc is of nearly the same specific gravity as Croton water, and if I shake this vase it will spread itself throughout the water, and be undiscoverable by the naked eye. The reservoir could be rid of the unpleasant-smelling plant speedily if it were 'blown out.' The reservoir, I believe, has not been 'blown out' of late on account of the dread of a drought."

Putting three drops of the greenish surface of the water into the vase beneath a powerful microscope, Dr. Waller invited the reporter to look at them. They were wondrous spheres, seemingly overcrowded with strange plants, resembling strings of tiny black beads an inch long, interspersed with larger transparent white beads. The plants seemed to be in a jelly-like setting.

"The white cells," explained Dr. Waller, "are believed to contain spores, and when they burst a new issue of the plant springs into life. So that the plant is practically undying, for when it dies by its death it gives life to a new set of plants. It certainly, though of a disagreeable odor, has not, in any known case, proved injurious to human health."

Dr. Alonzo Clark of 23 East Twenty-first street said that the impurity of the Croton water was unquestionably due to vegetable matter. The water that New Yorkers are using is not nearly so impure as that which is sometimes used through necessity in other cities of the United States.

To reach Croton Lake, the source of New York's water supply, the most convenient route is by train to Sing Sing and thence to drive over the intervening eight miles along a shady country road lined at this season with blackberry bushes bending beneath their burden of ripe fruit. Within a mile of the lake the road bends to the right and follows the windings of Croton river, or rather the rocky bed of what is sometimes Croton river. Now the only water in it lies in scattered pools of green slimy stuff, emitting the same smell as that with which New Yorkers are so familiar. The first place explored yesterday was the great gate house which stands at the west end of the dam, and in which is the mouth of the aqueduct that carries Croton to New York, thirty-eight miles away. The house has the same disagreeable smell that greets the New Yorker as he draws a glass of water from the faucet. Descending a long flight of heavy stone steps, the reporter reached the cavernous mouth of the aqueduct, and the black, seething volume of water was seen as it took its final plunge into the aqueduct for its twenty-four hours' journey to the city. The mouth of the aqueduct is perfectly open, there being before it not so much as a wire screen. Emerging from the gate house and proceeding a few steps, the reporter reached the edge of the lake, the spot at which the water enters the house. Even here there is no sign of either a screen or filter, there being merely a few perpendicular bars fixed across the opening, which keep out the larger pieces of floating debris.

The smell here is horrible, and the water for some distance above the gate house is covered with a thick greenish white scum, a little of which is kept from going into the aqueduct by a temporary boom of logs stretched across the corner between the waste gate house and the shore. Since the appearance of this scum Superintendent Wood has kept a gang of men at work night and day skimming it off with long-handled tin pans, and throwing it over the dam. That the work has been faithfully performed is shown by the mass of filth lying at the outer base of the great stone wall.

The water in the lake is eighteen inches below the lip of the dam, and thirteen inches lower than it was at the same date a year ago. Equally great quantities of filth and scum have accumulated in former years, but they have been carried over the dam.

Along the pleasant road that follows all the windings of the shore, the same white scum is floating in detached masses, all being slowly but surely drawn toward the engulfing whirlpool above the mouth of the aqueduct. It is also collected in quantities about the great beds of weeds that, at the present stage of the water, lift their heads above it.

The upper part of the lake is comparatively free from floating scum, but even there it is filled to an unknown depth with little perpendicular streamers of a furry vegetable matter that make it look thick and muddy. The Superintendent thinks that the scum and other impurities that render the water so unpleasant are in a measure due to the use of water from the storage reservoir at Boyd's Corner, eight miles above Lake Mahopac. He says that nothing of the kind was ever seen in the lower lake before the opening of this reservoir five years ago, and that there has been more or less of it ever since.

The scum seems to be gradually disappearing. The water that passed the gate house yesterday was much clearer than any seen during the preceding week. It may, however, be felt to a certain degree until the fall rains carry the matter over the dam. In the opinion of the superintendent and of others connected with the reservoir, the only permanent remedy is in an adequate filtering arrangement just above the gate house. There is no filter of any kind at the lake or on the whole line of the aqueduct save the copper screen at High Bridge.

The inhabitants of the lake region are experiencing some difficulty in obtaining a sufficient supply of water for daily use, for they will not use that of the lake and the various streams, and the springs are rapidly drying up.

Meeting ex-Police Commissioner Gardner on the steps of the Police Central Office, the reporter asked him what he knew about Croton water.

"Don't be afraid of it, mon," he said, "it will na hurt ye. Drink plenty of it, and let the other thing alone."

...being the Presi-
...is an unusually large sprink-
...prominent politicians among the crowd
congregated here to drink Congress water and
fire water, dance and flirt, play poker, and pull
wires. The meeting of the Republican State
Convention, and its tender, the Liberal Rump,
will take place two weeks hence. They come to
nominate a State ticket, and as the Presidential
election may turn upon the result in New
York, and as this result may be influenced by
the character of the two candidates for Govern-
or, of course the Republicans are taking deep
interest in that subject.

From what I gather by talking with all classes
of Republicans, I am certain that a deep plot
has been laid, and is now being worked out in
all sections of the State, to so manage the ap-
proaching Conventions as to overthrow the
Hon. Roscoe Conkling as the leader of the party
in New York. Gov. Fenton is co-operating to
this end, and the slaughter of Mr. Conkling will
be made one of the conditions of receiving the
aid of the Liberal Rump in the elections this fall.

The pivot whereupon the destruction of Mr.
Conkling's leadership is supposed to turn will
be the nomination for Governor. Under the
plausible pretext that Hayes will lose the State
unless such unstable politicians as George Wil-
liam Curtis are gratified, war to the knife will
be made upon the Hon. Alonzo B. Cornell, who
is undoubtedly the first choice of our able Sena-
tor. But those who must know claim that Cor-
nell will have every delegate from New York
city, and at least three-quarters of those from
Brooklyn, and perhaps the whole. This will
give Cornell nearly one-fourth of the Conven-
tion in that single locality. Then, all through
the State, the active, pronounced Administra-
tion politicians, who look to the selection of
delegates in the rural districts, are favorable to
Cornell; or, to speak more precisely, they are
actively at work in the interest of our distin-
guished Senator, and will see to it that the dele-
gates that come here two weeks hence will
eagerly follow his standard into the thickest of
the fight. Unless, therefore, these trusty lieu-
tenants are wholly mistaken, the Onelda chief
will have a decided majority in the Convention.
But, even if this should prove to be so, some of
Mr. Conkling's shrewdest managers say it will
not necessarily follow that Mr. Cornell will get
the nomination. The Senator may think it best
to bestow it upon another.

And right here Mr. Conkling's embarrassment
arises. He doesn't wish to pick a quarrel over a
mere name. He only demands that a friend of
his shall be placed at the head of the ticket.
Unless he is grossly misunderstood, he is much
annoyed at the course of Woodford. This
sprightly yet tedious little spouter is trying to
control in his own interest that transparent
humbug, the Boys in Blue. It was through this
or a similar organization that Woodford got the
nomination for Governor instead of Horace
Greeley six years ago. Woodford is now aiming
at the same end by the same means; whereas
Conkling, who sees how transparent this bit of
charlatanism is, is much disgusted. Neverthe-
less, if reports are to be credited, Woodford will
have quite a little show of delegates in the Con-
vention.

Mr. Conkling will encounter a more formida-
ble opponent than Woodford, or a dozen of his
calibre, if he sets himself to work in earnest. I
refer to Gov. Morgan. The friends of Mr. Mor-
gan complain that the overthrow he met with
in his encounter with Conkling for delegates to
Cincinnati last spring has taken the courage all
out of him. Nevertheless, I hear a vague rumor
that Conkling has made a compromise whereby
Morgan is to be nominated for Governor, and
Cornell for Lieutenant-Governor. I don't credit
it, for Roscoe Conkling is not likely to enter
into any arrangement that will tarnish his pres-
tige of absolute leadership in New York. In
certain contingencies that may arise he might
be content with Andrew D. White of Cornell
University, who is his firm friend, or with Pome-
roy of Cayuga, or, if hard pressed, even with
Robertson of Westchester.

Mr. Everts is now and then spoken of, but he
has no following among those who control the
machinery of the Republican party. As an op-
ponent of Conkling, he has no claims at all in
comparison with those of George William Cur-
tis, and Curtis has not the ghost of a chance for
the nomination.

The Liberal Rump that will show itself here
on the 23d inst. is spoken of with derision. Well
accredited reports from all parts of the State
prove that three-fourths of those Republicans
who voted for Greeley in 1872 are now support-
ing Tilden. The rest are merely in the market;
but though the regular Republicans will get
them, they will pay very little for them, for they
don't regard them as worth much. Possibly one
of them may be placed on the ticket for Prison
Inspector, while two or three will be nominated
for Presidential Electors.

THE SUN OUT OF TOWN.

We are daily in receipt of complaints
from friends of THE SUN, either temporarily out
of town or residing at a distance from New
York, that they cannot obtain the paper except
at an exorbitant price.

J. P. Davis writes from Baltimore that the
price has suddenly been put up from three
cents to five cents a copy, retail. There is no
reason for this, unless it be that the Penn-
sylvania Railroad exacts one and a quarter
cents a copy freight for New York newspapers
delivered in Baltimore by early train, when it
has been carrying Philadelphia morning papers
gratis for many years. Even with this im-
position the dealers in Baltimore ought to be able
to sell THE SUN profitably for less than five cents.

P. G. Everett writes from Ocean Grove, N.
J., that Reeves, the news agent there, who used
to sell THE SUN at three cents, now demands
five. If the Ocean Grovers will subscribe at this
office they can have THE DAILY SUN by mail,
post paid, at fifty-five cents a month.

"Anxious Inquirer," wants to know "why the
newsboy on the 9:13 A. M. train into this city, via
New Haven Railroad, won't sell me a copy of
THE SUN? He carries visible dozens of them in
the bundle of newspapers under his arm, and
yet his response to inquiries for your paper is,
'No SUNS.' He disdains argument or explana-
tion." We presume Mr. John Hoey of Adams Ex-
press might suggest to his agent a remedy, short
but decisive, in this case.

"A Reader" at Amsterdam, N. Y., who has to
pay five cents for his daily SUN, is respectfully
referred to our subscription rates, by mail, for
three months at fifteen cents a month secures the

changed his yacht Maggie B. for a solitary diana
worth \$3,000.

—Ericsson is experimenting, with the ob-
ject of obtaining mechanical power from the direct
action of the sun's rays.

—Whittier is spending the summer at the
Isles of Shoals. He appears rarely in public, and thus
keeps the curious at a distance.

—One of the street railroads in Paris
uses a locomotive without a furnace. It has a reservoir
of superheated water, which furnishes a supply of steam.

—Ole Bull has written a letter from Tyso,
Norway, to a Louisville friend, saying that the rumor
that he denied being married to his present wife is "a
broadcast lie."

—"Howard Glyndon," the writer, is
Laura C. Redden, a deaf mute. She has been a pupil at
the school for mutes at Mystic, Conn., and has learned
to use her voice.

—Boston uses six thousand dozen bottles
of lager a day, while the saloon custom has much in-
creased, though the sale of the stronger liquors has
greatly fallen off.

—Mrs. Robb of Corpus Christi, is called
the "Cattle Queen of Texas." She owns 75,000
acres of land, on which 15,000 head of cattle are fat-
tened for market each year.

—A Massachusetts clergyman received
thirty cents for a marriage fee the other day. The
groom offered him twenty cents at first, but finally ad-
ded ten, "though times is hard."

—"Wherever I go," said an elderly trav-
eller the other day, "I find men wearing out their old
clothes and hats; but the ladies, almost without excep-
tion, have brand new and expensive dresses."

—San Francisco has a strong man who,
with 400 pounds on his back, 400 on his breast, a 200
pound bar on his neck, and a man on each end of the
bar, dances, wearing shoes that weigh 75 pounds.

—A gentleman at Agra, India, slapped
and pulled the hair of a native servant, who fell and
died soon afterward from rupture of the spleen, which
was diseased. A magistrate inflicted a fine of thirty
rupees.

—A Paris letter says that "Baron Brisse,"
the cook, who recently died, supplied several newspa-
pers, for daily publication, dinner receipts, which many
families followed. He was very stout, measuring nine
feet around the waist.

—The old horse of an East Weymouth
(Mass.) milkman has had a romantic death. As soon as
his young rival had started on the familiar route the
old horse trotted off, too, stopped at each door, as
usual, and then went back to his stable and died.

—New deposits of guano have been dis-
covered in the coast province of Tarapaca, in Peru,
about thirteen miles south of Punta Grande roadstead,
and the port for which is on the west side of the penin-
sula of that name. It is believed that the bed contains
at least 3,000,000 tons.

—A French physician says that one-half
of the so-called drowned persons are buried alive, and
that they might be resuscitated by proper treatment
after being several hours under water. His suggestion
is the injection of alcoholic stimulants, whipping ener-
getically, and a hot iron in bad cases.

—The Czar of Russia has abolished pub-
lic executions, which have hitherto been preceded by
an exhibition of the condemned criminal on a black
cart with a placard round his neck throughout the prin-
cipal streets of the city, besides a parade for ten min-
utes under the garlands. In future executions will be
within prison walls.

—Mary Bogardus of Columbus, O., be-
came insane when she heard that her husband was
killed in the Black Hills. Imagining that she was Abra-
ham, she bound her little girl, placed her on an inverted
washtub, piled wood around her, set it on fire, and
would have burned the child to death but for the fortu-
nate interference of a neighbor.

—M. de Lesseps has communicated to the
Academy of Sciences letters from stations of the Suez
canal, dated June 15, and describing the sudden appear-
ance of a fireball in the heavens. It burst into sheaves
of light like a rocket, with a noise resembling the roll-
ing of thunder. It lasted about three seconds, and was
travelling in a southeast direction.

—Jones is exquisitely stupid and good-
hearted. He suddenly stumbles against a blind beggar.
The beggar's bowl of pennies is upset. Moved at the
sight of the mendicant's distress, Jones draws a match
from his pocket and, stooping down to where the blind
man was on all fours groping in the gutter for his
money, says, kindly: "There, my good fellow, I'll light
you."

—An Indiana youngster was reciting her
Sunday school lesson, which was about Solomon and
the Queen of Sheba. "What did the Queen bring to
Solomon?" asked the teacher. "Costly gifts," was the
answer. "What did Solomon show her?" "His wis-
dom and his breeches," was the startling reply. The
answer on the lesson paper read: "His wisdom and his
riches."

—An old woman in California refused to
allow a railroad corporation to lay rails through her
property. The track layers took advantage of Sunday
—a day on which she could not appeal to the courts—
and put down the rails. She was outwitted, but not de-
feated. When the locomotive came along over the
branch line she took up a position on the track and
would not stir. The locomotive backed and left her at
her post.

—A Paris paper publishes the following:
Scene: a telegraph office in Vienna.—The operator,
looking at his watch, says: "Too bad; I cannot go to
the concert to-night." "Why not?" asks a compan-
ion. "I am waiting for despatches from Belgrade, and
they don't turn up until midnight." "Have you the
Constantinople despatches?" asks the companion.
"Yes." "Well, write precisely the contrary and go to
your concert."

—A Wisconsin editor has faith that Til-
den and Hendricks will be elected, and he manifests it
by publicly advertising the following offer: "Any citi-
zen of Monroe county, not a subscriber of the Monroe
county Republican, and considered responsible for two
dollars, can have this paper mailed to him, commenc-
ing July 4, 1876, to be paid when Tilden and Hendricks
are elected President and Vice-President of the United
States. No Tilden, no pay! This means business. Walk
right up, gentlemen, and don't be afraid of heating us
out of the paper."

—M. K. Fuchs says in his new work on
volcanoes that the sea causes their eruptions, and repu-
diates the idea that volcanoes emanate from the centre
of the earth. The eruptions are owing to a struggle be-
tween the vapors contained in the volcanic focus and the
lava masses that stop their issue. The author points
to the fact that active volcanoes are almost exclusively
situated near the sea. Out of 139 that have been active
since the middle of last century, ninety-eight are in-
sular, and nearly all others are close to the coast. An-
other argument in favor of infiltration of sea water is,
that the chemical constituents of volcanic vapors com-
prise all the substances that distinguish sea water from
fresh.

—As to the idea of opening Shakespeare's
grave, the *Bibliothekist* says: "Shakespeare died in
April, 1616, and he has therefore been dead and buried
just two hundred and sixty years. Many will exclaim,
'Of what benefit will this be, after such a lapse of time?'
Nothing but dust would be found there.' Are we sure
of this? Very often the features and the clothing of
the dead are preserved for hundreds of years after
burial, and on opening their graves wonderful sights
have been seen. In a few minutes all crumble away,
and nothing but dust remains, but for a short time the
illusion is wonderful. There have been many graves
opened, in cases where their tenants have been buried
far longer than Shakespeare, and very often the fea-
tures and clothing were recognizable, and still more
often were the skeletons perfect. It is true that they
soon crumbled to dust, but they remained whole long
enough for photographs to be taken of them."

—The petty persecutions with which the
Prussian authorities in North Silesia worry the Dan-
ish population continue. The object now seems to be
to work on the children of Danish parents, and the at-
tempt at Germanization is even going so far as the in-
stitution of prizes in the schools for those children who
will "tell tales" against their comrades who speak
Danish among themselves out of school hours. At a
public dinner at Hadersleben, the Chief of Police en-
tered the room and prohibited all toasts, declaring that
"If the company did not ask his permission they would
not be allowed to finish their meal." All indignantly
refused to do so, and rose from the table, when the offi-
cial, finding that he had gone rather too far, was obliged
to declare that he "did not mean to say so." The re-
sponsible editor of the *Dannebrog* has again been con-
demned to one month's imprisonment on account of an
article "reflecting on the honor of the police."

—At the Assizes at Exeter, in England,
the other day, two cases were tried, one directly fol-
lowing the other, which to the reflecting mind will pre-
sent some inexplicable features. In the first case a
man was charged with the manslaughter of his wife at
Devonport. He pleaded guilty. The evidence of a po-
liceman was that he struck her with his clenched fist,
and she died in half an hour. The Judge, Baron An-
phlett, said there was no doubt that the prisoner had
struck his wife a violent blow. Assaults on women
should be severely treated, and in order to make a seri-
ous example of the prisoner he would be sentenced to
six months' imprisonment. In the next case a man, a
storekeeper was charged with stealing four fleeces of
wool, which were found in his possession, and clearly
identified by the prosecutor and his witnesses. The ac-
cused said he bought the wool. The prisoner had hith-
erto borne a good character. The same Judge sen-
tenced him to five years' penal servitude. The discre-
pancy in the two sentences rather surprised the people
in the court.

CONSERVATION OF RIVERS. — The following liquids are to be regarded as inadmissible to running streams : —

1. Those which contain in suspension more than three parts of any inorganic matter, or one of dry organic matter, in 100,000 by weight of fluid.

2. Those which contain more than two parts of organic carbon or 0.3 parts of organic nitrogen in 100,000.

3. Those which exhibit any distinct color when a stratum an inch thick is examined in a white porcelain dish.

4. Those containing more than two parts of any metal in 100,000 (calcium, potassium, magnesium, and sodium excepted).

5. Those containing in solution, suspension, or otherwise, more than $\frac{1}{20}$ of one part of arsenic in 100,000.

6. Those which, after acidifying with sulphuric acid, contain more than one part of free chlorine in 100,000.

7. Those containing in 100,000 parts more than one part of sulphur in the form of hydric sulphide (sulphide of hydrogen) or a soluble sulphide.

8. Those possessing more acidity than is indicated by adding one part of hydrochloric acid to 1,000 of distilled water.

9. Those possessing more alkalinity than that indicated by adding one part of caustic soda to 1,000 of distilled water.

Oyster Journal of Chemistry July 1879

PROFESSOR W. A. HAMMOND, in *The Sanitarian* for May, argues strongly in favor of a freer admission of light to dwellings and school-rooms. After mentioning many illustrations of the effect of this agent upon normal and abnormal conditions of the body, he says, —

“As has already been intimated, the management of the light in the sick-chamber is rarely the subject of intelligent and scientific action. In anæmia, chlorosis, phthisis, and in general all diseases characterized by deficiency of vital power, light should not be debarred. In convalescence from almost all diseases, it acts, unless too intense or too long continued, as a most healthful stimulant, both to the mental and physical systems. The evil effects of keeping such patients in obscurity are frequently very decidedly shown, and cannot be too carefully guarded against by physicians. The delirium and weakness which are by no means seldom met with in convalescents kept in darkness, disappear like magic when the rays of the sun are allowed to enter the chamber. I think I have noticed that wounds heal with greater rapidity when the solar rays are occasionally allowed to reach them, and when they are as far as possible exposed to diffused daylight, than when they are kept continually covered.

“In this country it is rarely the case that disease or injury is induced by excessive light. Occasionally, however, we meet with eye-affections due to excessive light, either coming directly from the sun

The amount of sewage found in Fairmount forebay, February 9, 1872, was 6.65 pounds per 1,000,000 United States gallons, and gradually increased until about November, when a large amount was added, and it has been steadily increasing since that time until the water is occasionally charged with an amount of sewage exceeding that carried by the river Thames, at London, England, and is totally unfit for use. Unless some precautions are soon taken to prevent the influx of this great amount of sewage of animal matter into our source of supply we may certainly expect to have our city visited by some epidemic scourge.

The remedies to be applied are, first, the exclusion of improper sewage.

AND NEW YORK HOUSES.

MILES,

NUT STREET,

FROM TENTH.

PHILADELPHIA STOCK EXCHANGE SALES.
Hallowell & Co., Bankers

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Natural sewage ~~rarely~~ exceeds 1 to $1\frac{1}{2}$
pounds to the 1,000,000 U. S. G.

WATER GARDEN:
SUNBATHING

B

ancient Railroad.

THEODORE MEGARGE,
2 South 8th street.

31*

ESK CHARCOAL BISCUIT, FOR
Dyspepsia, Heartburn, Acidity, Constipation and
forms of Indigestion. Put up in Tin Boxes and
sold by

JAMES T. SHINN,
Broad and Spruce streets, Philadelphia.

MARKING IN INDELIBLE INK WITH
a Quill Pen: Monograms designed to order; Lace-
making, altering, joining and repairing, by

M. A. TORREY,
1600 Filbert street, Phila.

Depreciation of the water supply by sewage, incident to natural causes, is at its maximum in the autumn, when the leaves and seeds have fallen from the trees, and when the ground is closed by frost, so that the winter showers and water from melting snows do not soak into the ground but flow over its surface into the creeks and rivers.

For a similar reason the sewage from the manuring of farms is greatest in spring, at the

The sewage run into the river from the manufactories located within ten miles of Fairmount dam consist chiefly of the following materials :

Refuse from bleaching and printing.

Refuse from scouring and dyeing.

Refuse from paper works (alkaline.)

Refuse from gas works, tar, ammoniacal liquor, and wash from foul lime.

The nearest mill is about $3\frac{1}{2}$ miles, and a majority of them are over $5\frac{1}{2}$ miles, from the Fairmount dam.

That portion of the sewage which consists of decomposing vegetable substances does not produce the hurtful effects of that from decaying animal matter, and if cesspool and surface drainage could be excluded, the whole of the refuse matter from the factories (except that of wool washing and scouring) at present put into the river by these factories could readily be rendered innocuous by proper exposure to air and light.

That not only the whole of this sewage, but also a great portion of that received from the borough of Norristown is reduced by oxygenation during its course down the river is proved by analyses, the results of which are published as an appendix to the report. After a review of the analyses made, the report says : "That portion of the sewage which is most dangerous and which would, in the presence of an epidemic, produce fatal results, is derived from the cesspools and the drainage of slaughter-houses. Singularly, the river is tolerably free from such sewage until it enters the pool at Fairmount dam. Into this pool from both sides of the river, is poured an enormous quantity of animal refuse from slaughter-houses, in which, I am informed, not less than twenty-five per cent. of the whole number of animals needed for our market are killed."

EVERYBODY,
THE FARM,
THE GARDEN.

FOR BECAUSE RELIABLE,"

Growth from selected stocks.

Containing 132 pages of useful informa-
tion, per pound or bushel, distributed free.

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1ST., ABOVE NINTH,

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HATS and HATS

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THURSDAY,

AND 8.

AND NEW YORK HOUSES

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The Great Plymouth Church teacher,
Tired and weary of provocation,
Intends to take a few days vacation,
Will be pleased to note the alteration.

While visiting this city is expected to attend the grand
and splendid exhibition of stationery and fancy
at FLEISCHNER'S new, prominent, elegant and
store, 205 North Eighth street. Fair dealing,
low price, and selling cheap have been my suc-
cess for many years. Soliciting continued patronage,
note the wonderful low prices:

Good commercial note paper, \$1 a ream; 75c. only for
dozen foreign stereoscopic views; stereoscopes, 75c.;
American scenery, comic and statuary, \$1 a dozen;
leather crossbarred shawlstraps, 25, 31, 35c.; 12-inch
writing desks, enameled, gilt edges, with lock
key, \$1 each; 39c. will buy a seamless, one-piece,
green leather, spring lock pocket book; fancy leather
is our specialty.

Notches, Valises, Wallets and Pocket Books of every
description; an endless variety of Initial Papers, new
and old shades, 15, 18, 20, 25, 31, 33, 50c. a box; 4 Ger-
man Picture Frames for 25c.; walnut frames, rustic, from
upwards; colored straws for frames, 15c. a bundle;
Marble and Notches from 75c. up; cloth bound scrap
books from 23c. up.

Acetage, 10c. a bottle; embossed cloth portfolios, with
lock and key, from 39c. up; music rolls and music folios
from 10c. up; umbrellas and sun shades of all grades and
prices within reach of all; rubber framed eye-
squares and specks, 10c.

Prayer-books from 23c. up; Bibles from 42c.
Methodist hymn books 60c.; an endless variety of
autograph albums, musical albums, autograph albums,
from 50c. upwards; chessmen, 75c.; crown checkers, 10c.
old maid game, 20c.; parcheeshi, 75c. and \$1; chess-
men, 90c.

Stationers' large pattern paper, 10c. a quire; table

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Dr. Cresson, in conclusion, enumerates what he deems to be the proper steps to be taken to restore and maintain the purity of our water supply, as follows:—

First. The diversion of all sewages now flowing into the pool of Fairmount dam below the Falls bridge into some other channel.

Second. The diversion of all sewages containing fecal and animal matter now flowing into the river below Flat Rock Dam into some other channel.

Third. The filtration of the sewage from all mills, so as to exclude solid matter, animal or vegetable.

Fourth. The exclusion of ammonia waste and surface wash coming from the gas works, cemeteries, &c.

Fifth. The cultivation of fish and of suitable plant life in and upon the waters of the river.

Sixth. The erection of suitable cascades over the reservoirs, so as to secure the benefits of aeration to as great an extent as possible.

Seventh. The employment of proper prophylactic and curative agents as occasion may require.

Water plants, such as float upon the water with their roots in the liquid and leaves in the air, should be cultivated in the stream.

The drainage from the gas works especially should be diverted.

If practicable it should be so arranged that the water which is pumped into the reservoirs shall flow into each reservoir over an artificial bed, forming as extended a cascade as possible, thus obtaining as much as can be the benefit of exposure to air and light, and so reduce to a minimum the amount of oxidizable matter.

Filtration would remove much of the floating matter and greatly improve the quality of the water; but, if proper precautions are used, it may be rendered unnecessary.

If at any time the condition of the water supply should become seriously polluted, chemical agents may be employed, which will, at least, render it harmless.

After quoting several extracts to show the relation unwholesome water bears to epidemic diseases, Dr. Cresson deduces that a condition of alkalinity is necessary for the propagation of typhoid and choleraic disorders, and mentions sulphuric acid as the best corrective. Confirming this by quotations from authorities on the subject, the report then states:

"In addition to the natural advantages possessed by the river Schuylkill for the purification of the water, it happens that it receives from many sources quite large amounts of free sulphuric acid. This acid is derived chiefly from the decomposition of the pyrites of the coal waste at the mines near its source and from the refuse of the iron furnaces erected along the course of the river."

To neutralize the free ammonia in the Schuylkill water on February 25, 1875, would for every gallon have required of commercial sulphuric acid only 0.05363 of a grain, or one grain of acid in about nineteen gallons of water, and it is only proposed to neutralize and not to add an excess of acid. As the amount of free ammonia scarcely exceeds that stated the proportion of acid needed is very minute and affords a ready and safe remedy in case of necessity.

The pollution of the Schuylkill river has been increased to such an extent as occasionally to class the water as "unwholesome;" prompt measures should, therefore, be taken to relieve it of sewage containing fecal and decaying animal matter.

do	56%	100 sh	Hestonville R	23%
do	56%	200 sh	Ins Co Nam Is	30
Leh R gld 6s	101%	450 sh	Phila & Erie Is	22%
Sch Nv 6s '95	79%	500 sh	do	22%
do '82	79%	100 sh	do	22%
sh Read R c&p Is	56%	100 sh	do	22%
sh do	Is	100 sh	do	22%
sh do	55	100 sh	do	22%
sh H & B Tp pf'd	16%	100 sh	Oil Creek R	b30 9%
sh Leb Val	62%	300 sh	do	c Is 9%
sh do	Is	50 sh	do	830 9%
sh Phil Wil & Balt	56%	100 sh	do	9%
		300 sh	do	c 9%

BETWEEN BOARDS.

0 Penna 6s 2d ser	102%	22 sh	German't'n P R	50
do	Is	100 sh	do	b30 50
do 3d ser	112	100 sh	Oil Creek	10
Read N Conv 7s	c 107	300 sh	do	b3 Is 10
Only 6s Nw	Is 135%	5 sh	P & T	130
do	Is 185%	123 sh	Leh Nv	b3 Is 51%
City 6s Old	102%	1100 sh	Erie R	b3own 30%
Leh V R reg 7s	108	53 sh	Penna R	c Is 55%
Read R Deb Bds	80	5 sh	do	c 55%
sh Phil & Erie	Is 22%	50 sh	do	&in 55%
sh do	&in 22%	300 sh	do	810wn 55%
sh Cent Trans Co	43%	100 sh	do	830wn 5%
sh Leb Val	Is 63	734 sh	do	b3 Is 55%

SECOND BOARD.

0 City 6s New	Is 105%	300 sh	Phil & Erie	22%
Allee V R 7-30s	93%	100 sh	do	b3 22%
W & F 7's	83	100 sh	Oil Creek	b50 10
Leh Nv gld 6s	101%	3 sh	Kensington Bk	68
Leh Nv 6s '84	101	30 sh	Read R	56%
0 Penna R	55%			

AFTER BOARDS.

0 Penna Canal 6s	70%	100 sh	Catawba N pf	39%
Read N Conv 7s	Is 107	10 sh	do	39%
0 Leb Nv	b3 51%	15 sh	Penna R	Is 5%
sh Cent Trus Co	43%	100 sh	do	b50 55%
sh do	80wn 42%	200 sh	do	830wn Is 55%
sh Read R	d Is 56%	50 sh	do	&in Is 55%
sh do	c&p 5%	718 sh	do	Is 55%
sh Phila & Erie	b50 22%	100 sh	do	b70 55%
sh do	860wn 22%	100 sh	do	b30 55%
sh do	Is 22%	300 sh	do	&in Is 55%
sh do	b10 22%	500 sh	do	85wn Is 55%
sh do	2 ds 22%	300 sh	do	Is 55%
sh Oil Creek	Is 9%	400 sh	do	b3 55%

Mer Bros., Bankers and Brokers, No. 30 South Third Street

at the following quotations up to 12 o'clock to-day

.....	114%	114%	North Penna. R.	52	a 52%
.....	108	109	Phila and Erie...	22%	a 22%
1881.....	121%	a122	O. O. & A. R. B.	10	a 10%
5 20s 1862.....	117%	a118	Lehigh Valley R.	62%	a 63
" 1864.....	119	a119%	" Nav stock.	51%	a 51%
" 1865.....	121%	a121	Catawba RR.....	21%	a 21%
July, 1865.....	120%	a120	" pref'd	43%	a 43%
" 1867.....	121	a121	North. Cen. R.W	32%	a 32%
" 1868.....	121	a121%			

GOLD VALUE.

0 40's.....	115%	a115%	English Sovr'ns...	483	a485
New 5's.....	116%	a116%	" Silver.....	480	a485
6's now.....	107%	a107%	0Kofchemark n'w		
0 N. J.	138%	a131	German coin.....	475	a490
0 RR.....	56%	a 56%	20 France (Nap.)	353	a356
0 Read R....	56%	a 56%	Prussian Thalers	71	a 72

Philadelphia Produce Market.

FRIDAY, April 8.--There is no falling off in the demand for Cloverseed and we notice sales of 60 bags Indiana at 11%; 60 bags Ohio at 11%; and 75 bags Pennsylvania and Southern at 11%; Timothy may be quoted 10s3, and Flaxseed at \$1 90.
There is a strong demand for Cotton, with sales of Long Upland at 16c, and Gulf at 17c.
There is rather more inquiry for Flour, with sales of including Extra at \$4 25 a 7s; Spring Wheat Extra at \$5 a 7s; patent do. at \$6 50 a 7s 50; Pennsylvania and Indiana Extra Family at \$6 25 a 7s, and grades from \$5 25 to \$8. Rye Flour is firm at \$5.

Mohr's process for detection of carbonates in water; alkalinity shown more delicately with cochineal than with litmus. It is much more sen-

-litine

and gives much sharper indications. Its natural color is a carmine red, which is at once changed by acids to a yellow or reddish-yellow. The change is sharp and sudden, with no return of color, as is the case with litmus. The solution is prepared by bruising a little of the commercial cochineal in water which has been gently heated, adding a little alcohol, and filtering. For the process a standard solution of sulphuric acid is prepared by dissolving 4.9 grammes (by weight) of pure H^2SO^4 and diluting to 1 litre; 2ccs. of this are equal to 10 milligrammes of carbonate of lime. If 700 ccs. of water be operated on, 2 ccs. of standard solution used will represent 1 grain of carbonate of lime per gallon. The process is simple: 700 ccs. of the water are taken, and a few drops of cochineal solution added (*N.B.* the color should not be too deep), the solution of acid is dropped in until the carmine red is changed yellow; read off the ccs. used and divide by 2, the result is grains of carbonate of lime per gallon. With regard to search for poisonous metals, the qualitative test is really all that is necessary for hygienic purposes. Lead and copper can be recognized in very small quantities by means of a solution of ammonium sulphide, which will produce a dark coloration of sulphide of the metal: if the water be then acidulated with hydrochloric acid without the dark color disappearing we may be certain that lead or copper is present. Should the acid clear up the water, the sulphide has been iron only.

to Brit. Assoc. at Bath, 1876
ON HEREDITY IN ALCOHOLISM.

In the *London Medical Record* for January, Dr. Charles Aldridge gives an interesting account of Taquet's observations on this subject. M. Taquet would place the abuse of spirits in the first line of causes which tend to depopulation. As Lancereaux has said, alcoholism is not only a disease of the individual, but is a family disease, and projects its evil influence upon the race. One sees it follows the individual in his offspring, his family receiving from him a fatal heritage in debility, deafness, a crowd of nervous disorders, moral imbecility, idiocy, mental alienation and weaker instincts. The Indians of America have disappeared before the destructive powers of alcoholism, when fire and sword failed to vanquish them. Daredin tells us that the families of drunkards become extinct in the fourth generation, after having descended through the scale of physical and intellectual degeneration. A remarkable case, cited by Taquet, in which most of the children of a drunkard showed serious manifestations of hereditary alcoholism, presented two important considerations: 1. That sexual desires show themselves early in children of drunkards, and are associated with an absence of moral sense. 2. That phthisis, when not hereditary, is capable of being produced by spirituous excesses. Magnus, Huss and Launay have supported this thesis by numerous examples. Again, other things being equal, the hereditary transmission will be more surely by the mother than by the father. The children of female drunkards are often idiots, imbeciles, insane or epileptic. Of all the manifestations of alcoholic heredity, epilepsy is believed to be the most common. Of ninety-five epileptics examined by M. A.

Voisin, twelve had ancestors who died from alcoholic excess. Marcet reports of a drunkard who had sixteen children, that five were dead and the remainder epileptic.

TEMPERANCE IN ELEMENTARY SCHOOLS.

A meeting to advocate the introduction of temperance teaching into the ordinary curriculum of public elementary schools was held in Exeter Hall, London. The Lord Bishop of Exeter presided, and the Dean of Bangor, Sir Charles Read, Dr. Richardson, and several other influential gentlemen took part in the proceedings. The object of the meeting was undoubtedly a good one, as, in most instances, there is more hope of improving the morality of the working classes by inculcating wholesome precepts in the minds of their children than if those who have long given way to habits of intemperance were the only persons dealt with. At the same time, it must be remembered that, in a matter of this kind, the rising generation are more influenced by example and by home influence than by all the moral teaching that can be provided for them in schools. As a rule, we do not find that the religious education of young children has very much influence upon their conduct in after years, and we are afraid that all the lectures or lessons on the evil results of intemperance will be forgotten by the time they are exposed to the temptations by which most of them are surrounded. It may even appear that the familiarity with the subject which such teaching will naturally involve may put into their young minds ideas and inclinations which otherwise they would never have entertained. The promoters of this movement, therefore, must not be too sanguine as to the beneficial results of temperance teaching. They can rest satisfied that the principle of the proposed scheme is a good one, and hope that more good than harm will come of it.—*Med. Press.*

FOOD AND INFANT MORTALITY.

We have more than once drawn attention to some of the causes of infant mortality in this country; but if a knowledge of these causes is to be extended to the class of people among whom this mortality is greatest, it must be through other channels than those afforded by the medical journals, or the columns of the daily newspapers. Lectures are one and a very useful means of communication between the minds of the scientific, or the more-educated, and the minds of the more ignorant classes of the community. Ignorance, want of cleanliness, and neglect will account for a large number of the deaths which occur among children. Medical men, who know all about the proper feeding of infants, are not so frequently consulted on the subject as they should be. The very persons who are the most ignorant of, and at the same time the most interested in, these matters are often the most indifferent to them. Some members of the profession, however, do themselves neglect too much the subject of infant dietetics, and are more ready to cure than to prevent the evils resulting from improper or insufficient nourishment. "It is to be regretted," remarks a lay contemporary, "that

a few simple hints on the proper feeding of infants, especially on the easiest and safest way of giving them substitutes for their own natural nourishment, are not imparted to the poor." The suggestion is not a bad one, and one to which the excellent National Health Society of England might give, if it has not already given, some of its valuable attention. A part of the work done by this Society is to distribute among the laboring classes tracts or leaflets on various subjects of sanitary importance, and we have no doubt that infant feeding has or will soon be a subject on which they will endeavor to instruct those poor people who stand most in need of their assistance.

The mistake is often made of imputing the mischief resulting from improper feeding to anything but the right cause. Diarrhoea is said to be owing to "bad drainage," or to the heat of the weather, when after all it has arisen from the nature and quantity of the food. Convulsions are imputed to teething, when clearing out the bowels and regulating the diet will at once remove these symptoms.

Again, it is too often forgotten that there is *over* feeding as well as *under* feeding, and *improper* feeding of infants. We have seen children of two years old have as much to eat as would be sufficient for a strong working man; and it is a common thing to hear mothers say that the baby, who has perhaps only one or two teeth in its head, "has a bit of whatever happens to be going." Such was the case with a child about whom we were lately consulted. He had suffered for some time from croup, and had been treated unsuccessfully with bromide of potassium, and various other remedies. Two or three physicians had seen him, but strange to say, none of them thought of inquiring into and regulating the diet of the child. This had been of the grossest and most incongruous nature, and soon after a lighter and more suitable diet was prescribed the little patient completely recovered. — *Med. Press.*

WINE ADULTERATION.

The *Bien Public* says that the falsification of wines with fuschine, and the dangers to the public health arising from that practice have obliged the government to take active steps for its repression.

At first the examination of the wine was made at the stores of the merchant, but this was found to be useless and the adulteration continued. A special commission has now been appointed to inspect the liquor at the wine shops, and samples are submitted to analysis exactly according to the English system. If the presence of fuschine or any other dangerous ingredient is established the seller is severely punished.

POISONOUS TIN.

An ordonnance of the Parisian police, which was adopted some years since, ordered all tin-ware manufacturers and travelling workmen to employ exclusively fine tin for covering copper vessels

which are intended for cookery. It has been proved by recent analyses made at the instance of the Council of Hygiene of the Seine that this order is systematically disregarded. It has been found that specimens of the metal employed in tinning such vessels, contained relatively large quantities of lead, which is liable to be dissolved and thus exercise poisonous effects. The police have been ordered to make inspections of the tin factories in future, in order to check this practice.

PREVENTION OF ARSENIC POISONING.

The poison most commonly used for criminal purposes is arsenic, its tastelessness preventing the victim recognising it. In view of this, Dr. Jeannel, of Paris, proposes that druggists shall sell arsenic to the public only when so combined that it immediately attracts attention when added, either by accident or design, to food. The plan has not been overlooked, for there is an officinal mixture in which the arsenic is combined with peroxide of iron and a small quantity of aloes, but it is not sufficiently characteristic, and he calls attention to a mixture termed Grimaud's mixture. This consists of one centigramme of iron sulphate and one of potassium cyanide to each gramme of arsenious acid, forming a light-blue powder. On being moistened, however slightly, it becomes of a rich blue color, whilst the taste is so distinctly chalybeate that it is impossible to overlook its presence in any article of food. It has the advantage of not altering or interfering in any way with the therapeutic properties of the arsenic.

OPIUM EATING IN THE UNITED STATES.

The total amount of opium imported into the United States for 1877 was 2,589,924,383 grains. Deducting one-fifth for medical uses, there remain for opium eaters 6,125,383 grains daily. If thirty grains are taken as a daily dose, there are in the United States over 200,000 men who eat opium.

HUMAN MILK ON SALE.

It strikes the European as a singular fact, that human milk can usually be obtained without difficulty in China. In the native city of Shanghai, it costs at present about twenty cents for half a pint. Dr. Mackenzie, of Ningpo, says that he has frequently seen the native women milking their breasts into small basins, in the streets of the native city and foreign settlement of Ningpo. It is esteemed by the Chinese as a nourishing food for old people and for consumptives.

At the Physiological Station at Kuhthurm the writer saw one of the famous "respiration chambers," of which there are now four in Germany. He describes it as follows:—

Here, again, we have a method of research peculiar to German investigators, and which has yielded a rich harvest of results. We were fortunate enough to see the chamber in action. It is built of iron, with glass windows, and when closed is perfectly air-tight. The apparatus connected with the chamber admits of air being slowly drawn through it, the air as it leaves the chamber being measured, and the amount of water, carbonic acid, and other gases present in the air being determined. As the composition of the air which enters the chamber can equally be ascertained, all the data necessary

good. Add a half-litre of hot distilled water, in which 4 grams of potassic cyanide have been dissolved. Stir well with a glass rod and filter through blotting-paper on a glass funnel. The potassic cyanide must be dissolved beforehand. The gilding process consists in cleaning the objects thoroughly, and placing them on a piece of clean zinc in a bath of gold prepared as above and gently warmed, where they are left for the space of ten minutes or more, according to the thickness of the gilding desired.

TO PRESERVE FENCE POSTS. — According to excellent authority, fence posts can be made as imperishable as iron for less than two cents apiece. Pulverized charcoal is to be stirred into boiled linseed oil to the consistency of paint, and a coat of this is to be brushed over the part of the post to be placed in the ground.

for an exact experiment are obtainable. In this respiration chamber the animal to be experimented on is placed, receiving at the same time a diet of known composition. Everything that the animal takes into its system in the form of food is known, and everything that leaves the animal as excrement, or by perspiration or respiration, is also known; by difference, therefore, the constituents retained in the body of the animal can be ascertained. By this painstaking and thorough method of investigation many important facts have been brought to light. Thus, it has been shown that fat is formed in the animal from the albuminoids contained in the food, while in the older view of nutrition it was supposed that fat was exclusively formed from sugar, starch, and other carbohydrates. Another fact established is that oxygen is stored up in the system during sleep, and re-evolved as carbonic acid during waking hours.

GLEANINGS IN FOREIGN FIELDS.

THE KING OF THE PUMPKINS. — A recent number of the *London Garden* says: "Last week took place that ceremony of the Paris autumn markets, the 'crowning of the pumpkin.' The custom is not believed to be very ancient, though it dates, say the learned, from the year One. All market gardeners, who own a fruit of extraordinary size, send in their claim. A decision is made after long comparison and much study. The very biggest and fairest of all pumpkins competing is picked out, is adorned with a paper crown, and is raised upon a beautiful gilt board hung with ribbons, and adorned with little flags. Four giants, chosen among the porters of the Halles, and suitably attired, carry it all round the market. Every stall-keeper is bound to rise and do obeisance. Flowers and vegetables are cast before the king. Two noteworthy market-women present an address, and there is abundance of innocent foolery. It is the great day of the Halles, and every one does his best to make the crowning a success. Then the king is very solemnly sacrificed, and his members are put up to auction. It is the proper thing amongst his subjects to have a fragment of his Majesty in the soup that night."

FLOWERS VERSUS FLIES. — The Rev. George Meares Drought, writing from Ireland to the *London Times*, says: "For three years I have lived in a town, and during that time my sitting-room has been free from flies, three or four only walking about

Pettenkofer on CO₂ waters
(1875)

BOST

tries, those which contain the most carbonic acid are seldom the best and purest, because we must take in the bargain along with the carbonic acid many other substances which we would otherwise gladly avoid."

The presence of free or uncombined carbonic acid in spring-water in a limestone region is quite uncommon (unless it be derived from subterranean gas springs), for the reason above stated, that it dissolves the carbonate of lime, or chalk, forming with it the soluble bicarbonate of lime.

To ascertain whether a given sample of water contains any free carbonic acid, or whether all the acid exists in combination with lime, two methods are given by Pettenkofer. The first consists in the use of turmeric paper along with lime-water. Water containing bicarbonate of lime is without action on turmeric; hence, if a few drops of lime-water be added to water containing free carbonic acid, a bicarbonate will be formed and the turmeric will not be browned until an excess of lime-water has been added over and above what is required to combine with all the free carbonic acid. If the water to be tested contains no free carbonic acid, a single drop of lime-water will render it alkaline, and the turmeric paper will be browned. The second and more recently discovered method is, however, preferred by Pettenkofer, but unfortunately the reagent is neither so well known nor so easily prepared. It is rosolic acid, prepared by Kolbe's process, namely, the action of sulphuric acid on phenol and oxalic acid. This acid is colored red by the bicarbonates of the alkalis and alkaline earths. To prepare the test solution, dissolve one part of pure rosolic acid in 500 parts of 85 per cent. alcohol, and neutralize with caustic baryta until it begins to redden. Add about $\frac{1}{2}$ cubic centimetre of this solution to 50 c. c. of water; if the liquid becomes colorless or yellowish, it contains free carbonic acid; if red, only bicarbonates are present. In tests made by Pettenkofer on German waters he reports that all the spring and well waters of Munich, the waters of the Isar, the water of Stadtbäche, and some drinking-water from Würzburg gave the red color indicating bicarbonates. Distilled water, rain, and snow-water, of course, were not reddened. Of those which remained colorless he mentioned Selters, Apollonaris, Wildunger, Kissingen, Ragoczy, Weilbach sulphur water, Pyrmont iron water, etc. H.

Water
& Oxygen

1875

It has long been known that dissolved oxygen played a great part in the purification of streams, and was the principal agent by which putrefiable substances were broken up and converted into harmless inorganic compounds. A recent essay by M. Gerardin, to which the prize was awarded by the Paris Academy of Sciences, contains some striking results obtained by the abovementioned methods of investigation. To summarize, these methods were:

1. A determination of the amount of oxygen held in solution. 2. An observation of green plants and aquatic mollusks. 3. A microscopic examination of algae and infusoria. It is claimed that the results obtained by these three methods were identical, and that, where the water was clear, with abundance of fish, watercress, etc., the water contained a correspondingly large amount of oxygen; while in places where the dissolved oxygen was small, fish and the higher types of aquatic plants were wanting, and certain low forms of vegetable growth had taken their place. The river Vesle in France from Rheims to Braisne was taken as the field of observation. It was studied over a distance of 37½ miles, during which it received the sewage of one large town (that of Rheims, the daily flow of which amounts 4,180,000 gallons) and other impurities. Above Rheims, the water (which was clear, wholesome, and with abundance of fish, charas, watercress, iris, etc.) contained 0.66 cubic inch in 61 cubic inches of water. In passing through a suburb above Rheims, the Vesle received the refuse of some dye works, which colored the water; and in place of the fish and watercress, *sparganium simplex* makes its appearance. At a point where the water had received the contents of the five principal sewers of Rheims, the water was thoroughly polluted and contained but 0.03 cubic inch of oxygen in 61 cubic inches. Two species of algae, the *biggiatoa alba* and the *oscillaria natans*, were developed largely, the latter to such an extent that the whole surface of the sluggish water was covered with a thick blackish coat.

This coat was seemingly so solid that animals and even men have rushed on it, mistaking it for *terra firma*. Above the mill at Macau, where the oxygen had increased to 0.45

Salt.

Hall's Journal of Health thus sums up some of the many uses of salt: "It will cure sick headache, make cream freeze, make the butter come, take inkstains out of cloth of any kind, kill wens, kill worms, make the ground cool; so it is more congenial to celery, cabbage, etc. It will ease the itching pain caused by irritating skin diseases, like hives, itch, etc. It will produce vomiting or stop it, as you like; and many other things too numerous to mention. All pure salt will do this to a certain degree, but sea salt is the most effectual in its action."

Salt is a most remarkable and highly useful substance; but we think that our cotemporary will find, on practical trial, that the article will not do all that is above claimed. For example, salt will not make cream freeze, it will not take inkstains out of cloth, and probably will not do more than one or two of the other things abovementioned.

Tunnel at Rio de Janeiro.

The Brazilian Government have under favorable consideration a project by Mr. Bucknall for connecting the north and south railway system of the empire with the capital, by a tunnel, under the narrow entrance to the bay of Rio de Janeiro, between the capital and the submarine city of Nitheloy, a distance of about two miles. The preliminary investigations clearly demonstrate the practicability of the undertaking; and its important bearing on the future of the country will be apparent to those acquainted with the commerce, railway system, and topography of that part of the empire. Mr. Peter W. Barlow, C.E., has gone to Rio, commissioned to conduct the survey and prepare the necessary plans and estimates.

CORN-fed hens do not lay in winter, for the simple reason there is no albumen material in the corn. When wheat is given to them, there is fat enough in it to supply all that is needed for the yolk, and albumen enough to make the white, and lime enough to furnish the shell; it does not thus seem difficult to understand why corn-fed hens should not lay, as they do not, and why wheat-fed hens should lay, as they do

Scientific American.

cubic inches, the two varieties of *alga* mentioned above had disappeared, and the bed of the Vesle was covered with a long whitish *alga*, called *hypheothrix*.

At Compensé mill, the oxygen had increased to 0.5 cubic inch, the *hypheothrix* had almost completely disappeared, and the *sparganium simplex* was again abundant. Below this point the amount of oxygen increased, and with it a corresponding change took place in the vegetation until, at Braisne, the water contained 0.66 cubic inches of oxygen per litre, all traces of pollution had disappeared, and fish and watercress flourished.

From this it would appear that a properly aerated and pure water showed, when polluted, the amount of pollution by a corresponding diminution of oxygen, by the appearance of *sparganium simplex*, *spirogyra*, *hypheothrix*, *biggiatoa* and *ossilaria*, and a progressive improvement by a corresponding increase of oxygen, and the appearance of these plants in reverse order. It remains for us to apply and extend this knowledge to our own streams. Fortunately, the means are not wanting, since the great monograph on the fresh water *alga*, magnificently illustrated with plates, by Dr. H. C. Wood, which was not published by the American Philosophical Society, has been recently printed by the Smithsonian Institution.

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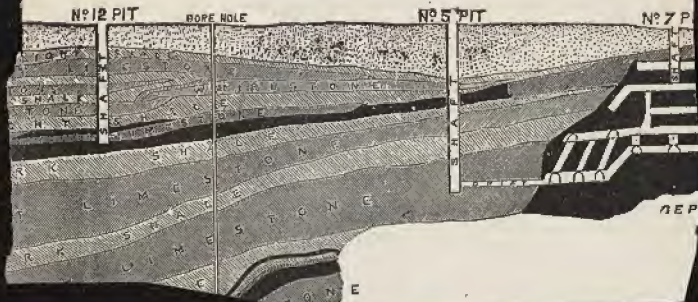
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Scientific American.

industry due to the fact that the area is about 1,000 acres, of which nearly half is ore-bearing ground. The total number of hands employed above and below ground varies from 1,000 to 1,200, figures which give an idea of the importance of the enterprise. There are altogether twelve shafts, of which three are now in process of sinking, while the remaining nine are in active operation; the greatest depth at present attained is about 75 fathoms. In addition to the shafts there is an open working from half an acre to an

SECTION



Prof. Chandler said that 104,000,000 gallons of Croton water were used in Manhattan Island—a quantity that could never be subjected to purification. The best thing that could be done in this case is to let it run into the rivers on both sides of the island. He was called upon for an opinion as to water supply for the city of Albany, N. Y. The Albanians had a prejudice against Hudson River water that had received the refuse of Troy, eight miles above. But Prof. Chandler recommended it. The simple action of dissolved oxygen soon dissolves (burns) the matter which contaminates rivers, and the Hudson River was pure by the time it reached Albany.

Prof. Hunt said that he had not proposed the system as a substitute for water sewage, but for earth-closets. Prof. Chandler said that the most concentrated material for fertilizing purposes cost the city of New-York \$48,000 for its removal; no price could be got for it from contractors. Prof. Van der Weyde said that the Rhine water at its mouth, after passing numerous towns and cities, was pure and excellent. It was only when rivers were covered by ice that the impurity remained. Prof. Hough said that the water carried forty miles from the city of Chicago was still exceedingly impure, though the river ran over two dams. Prof. Van der Weyde could only suggest that Chicago must have an unusual power ^f making water dirty.

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1854 which was the
Upon nervous diseases and their causes Dr. Mitchell has long been a final reference; he is especially welcome, therefore, when he offers so agreeable a cure. This partial return to barbarism is also, he declares, a safeguard against the colds and catarrhs which are induced by the constant changing of our atmosphere by going in and out of our overheated houses. "Not only are the well better for such steady exposure, but cases of chronic throat trouble, catarrhal disorders, and chronic bronchitis rapidly disappear under the mild and natural treatment of the camp-cure, and the relief from dyspeptic troubles is quite as sure." The last two years have witnessed so marked a reform in the popular methods of spending

this holiday which

Nitrous Acid — Iod. Potass. & starch
in sol., & dilute Sulph. Acid. } Effect
Blue color. } immediate 2

Ammonia — Nessler's sol. (of
iod. potass. concs. sol.
& caustic potassa) ~~and~~ } very
Yellow color or brown } delicate
precipitate } test.

Iron — Red & yellow "precipitates
of potash." } Red for "ferrous"
Blue precipitate. } & Mellow for
"ferric" salts.

Sulphuretted Hydrogen — A salt of lead. } Also, odor
Black precipitate. } on heating.

Organic Matter Decolorize, of Permang. Potass. sol.
Primp, touch with gold sol. (violet
black). Find "albuminoid ammonia,
nitrites & excess of chlorides." } Least
exact }
as to }
amount. }

Water Analysis.

<u>For</u>	<u>Reagents</u>	<u>Uses</u>
Lime	Oxal. of ammonium white precipitate	5 gr. per gallon give turbidity; 16 gr. a precip.
Chlorine	Nitr. Silver, with dilute Nitric acid. white precip.; becoming lead-colored	1 gr. per gallon, hazy; 10 gr. a precipitate.
Sulphuric Acid	Chlor. Bar. & dilute Hydric. acid white precipitate	3 gr. per gallon turbidity & slight precip.
Nitric Acid	Bruce's soln. of pure Sulphuric acid Pink & Yellow zone. Or, Sol. Sulph. from & pure Sulph. Acid Olive-colored zone.	1/100 gr. per gallon deter- table.

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